



First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 612 (No. 38, Vol. XII.)

SEPTEMBER 16, 1920

Weekly, Price 6d.
Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2

Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828

Annual Subscription Rates, Post Free:

United Kingdom .. 30s. 4d. Abroad.. .. 33s. 6d.*

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates

* European subscriptions must be remitted in British currency

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EDITORIAL COMMENT



IN the days before the War the fighting Services offered very few prospects for the ambitious youth who desired to make a career for himself. If, attracted by the glamour of a life in the Service, he enlisted, he might, with a great deal of luck, attain, after years of service, to warrant rank. If, on the other hand, he found that the life was not all he had thought, he might leave at the end of his period of service with the Colours and return to civil life, with no trade or profession in his hands and with the handicap of "Reserve" against him to debar him from employment. Too often his life turned out a tragedy, and he drifted into the ranks of the casual labourers and the hangers-on to the skirts of the community. So long as a man behaved himself and was a reasonably good soldier that was all that was expected of him, and no particular interest was taken in him beyond that necessary to invest him with these qualities. As to his future when his period of service had expired, nobody seemed to think that this mattered very much.

The R.A.F. as a Career

Times and methods have changed, however, and in all three Services much more than a passing interest is shown in the future of the youth of the country who elects to serve and wear the King's uniform. In particular, the Royal Air Force takes almost extraordinary pains not only to make the youthful recruit into a good soldier, but to fit him for civil life at the end of his service. So much will be gathered from the review of his life and doings which we print in another part of this issue of FLIGHT. At the huge training establishment at Cranwell he is taught to cultivate not only the *corpore sano*, which is the ideal of the fighting man, but the *mens sana* which makes him a useful citizen as well. He is given an excellent general education, besides being taught a useful trade. If he shows exceptional promise, he may look forward to early promotion in the non-commissioned and warrant ranks of the R.A.F., or may even aspire to a commission. In

DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

Sept. ...	Air Ministry Amphibian Competition, Felixstowe and Marlesham
Sept. 8, 9	Fédération Aéronautique Internationale Conference, Geneva
Sept. 18-19	Schneider International Race, Venice
Sept. 28 ...	Gordon-Bennett Aviation Cup, France
Oct. 7 ...	Lecture on "Civil Aviation," by Sir F. H. Sykes
Oct. 8, 9, 10	A.C.F. Meeting at Buc
Oct. 21 ...	Lecture, "A Comparison of the Flying Qualities of Single and Twin-Engined Aeroplanes," by Squadron-Leader R. H. Hill
Oct. 23 ...	Gordon-Bennett Balloon Race, Indianapolis, U.S.A.
Oct. or Nov.	U.S. National Aeroplane Race (New York to San Francisco)
Nov. 1 ...	First Open Competition for R.A.F. Boy Mechanics

such cases he will probably elect to make the R.A.F. his career for life. Where he does not, he has the certain knowledge that on his return to civil life he will be worth good wages to employers in any one of a dozen trades, according to the one he has chosen to be trained in. During his service he will find that life is not all work and hardship, by any means, for he will on the average be far better off and enjoy almost as much liberty of movement and action as though he were in civil employment.

When we review all the manifold advantages which are offered by the R.A.F. to the aspiring youngster of the right type—and the wrong has no earthly chance of entry into this Service *d'élite*—we cease to wonder that there is so much eagerness displayed to obtain nominations for entry. Whether we consider the R.A.F. as a life career, or merely as a training-ground for ultimate work in civilian employ, we are compelled to marvel at the contrast it displays to the conditions which obtained in the Army, and to a lesser extent in the Navy, before the War. It seems to us to solve partly, at least, the age-long problem of "what to do with our boys."

Sopwiths Close Down

The closing down of the Sopwith works at Kingston conveys a lesson for all who run to read. In these works were constructed during the War some of the finest fighting aeroplanes possessed by any of the belligerent Powers. When the Armistice came to put a period to hostilities, the directors, with their accustomed foresight, decided to employ the works in the manufacture of motor-cycles, for which the plant was eminently adapted. They secured a magnificent design in the A.B.C., and orders poured in upon them for the new machines. In the interval, like too many other firms in like case, they have had to pay out on account of wages and other outgoings antecedent to production, and at last their resources of credit have become exhausted. In these circumstances there were but two courses possible of adoption. The one was to hang on and eke out resources until the coming of better times; the other to close down altogether at once. They have taken the second, and although we very naturally deplore the passing of a firm so famous in the annals of the War, it is difficult to see what else could have been done. We are quite satisfied that the works' management has done its best to get to the production stage, and that the efforts which have been made have not been successful is not to be laid at their door. But the payment of high wages for a low standard of production cannot be maintained for ever, and one day the inevitable is bound to happen.

According to an official of the company, the ultimate decision was taken as a result of the "slump" in the motor trade. Valuable orders from all parts of the Overseas Dominions and from Scandinavia have been cancelled, and this state of affairs, coupled with the competition of America, has made it impossible for a lucrative trade to be carried on. So far as we are competent to judge, there is a very wide market for motor-vehicles if their manufacturers can deliver the goods. It is too much, however, to expect people who have ordered a year or more ago to wait indefinitely for the completion of their orders, and they quite naturally turn elsewhere for the fulfilment of their requirements. That is a lesson which may well be laid to heart by all engaged in industry in this country. It is fully appreciated, we know, by

those who hold responsible positions in the commercial world, but it is only just beginning to dawn upon many whose sole idea of work it is to get as much as they can for as little as they can give. However, that is becoming so obvious to even the meanest intelligence that we need hardly labour the point.

We trust most sincerely that some way out of an apparent *impasse* may yet be found and that the firm of Sopwith, with all its traditions in the world of aviation, will not permanently disappear.

Aerial Communica- tions with Norway

Among the really progressive local bodies of the Kingdom not the least go-ahead is the Dundee Town Council. This body has recently had under consideration various plans for developing the industries of the city, and one of the suggestions made was that, in view of the growing importance of commercial aviation, a piece of ground should be allocated for an aerodrome, with a view to the institution of a flying-boat service between Dundee and Norway. The Council got into communication with the Air Ministry and has now been informed by the latter that there exist no powers enabling municipalities to acquire or hold land for the purpose of constructing aerodromes. The Ministry is quite in accord with the suggestion that in the preparation of development plans for Dundee, the allocation of such a site would be advantageous, and have offered to send a representative to report and advise upon any site suggested as suitable for the purpose. The Ministry further adds that it considers that the possibilities of the opening of direct flying-boat services to Norway should not be lost to sight.

Although at the moment it is not competent for local authorities to purchase land for aerodromes, a clause has been embodied in the Air Navigation Bill, now before Parliament, to enable such powers to be granted. The question has already arisen in the cases of Edinburgh and Glasgow, in which the local authorities desired to construct aerodromes but were unable to do so on account of the want of necessary powers. In these cases decisions have already been taken regarding the suitability of selected sites, and all that is necessary to enable work to be started is the passing of the clause referred to above. That it will pass there is very little doubt, because it is so obviously desirable that the powers indicated should be vested in the local authority, subject to the assent of the Air Ministry, contingent upon the suitability of the selected site.

Air Mails in America

The United States Post Office has inaugurated an aerial mail service between New York and San Francisco, over a distance of 2,651 miles. The service is a daily one and is expected to reduce the time between the two seaboard cities from 91 hours to 57 in the winter and from 91 to 54 hours in summer. The mail leaving New York at 5.30 a.m. will be due at San Francisco at 2 p.m. on the third day out. It is not so stated in the cabled advice of the opening of the service, but it seems to be reasonably clear that the service will be conducted on the relay system. To expect a single machine to cover so vast a distance would be asking a great deal, and we give the United States postal authorities credit for more knowledge of aerial navigation than to try so ticklish an experiment.

The Camera and the 'Plane

SEPTEMBER 16, 1920



The "Citadel," Cairo, showing the Mosque of Mahommed Aly, as seen from an Aeroplane

FLIGHT
AERIAL PHOTOGRAPHY

Naturally, the main interest to ourselves lies in the evidence afforded of the go-aheadness of the American Post Office, especially when it is contrasted with the comparative attitude of lukewarmness, to give it no harder name, of our own. The former seem to be quite satisfied that aircraft are to be relied upon to carry the mails with safety and dispatch, and, as speed of delivery is regarded as a cardinal virtue in the States, the Post Office is ready and willing to take up a proved proposition which promises a substantial saving of time in transit. A veritable network of air mail services is spreading itself all over the United States, to the manifest benefit of the business community, which has been quick to avail itself of the facilities offered by the postal authorities. In the meantime, we have two cross-Channel mail services running, both of which owe their inception to private enterprise, while we do not even hear of any serious intention to extend them. At the end of the War we were absolutely supreme in the air. As things are going now it will not be long before there will be none so poor as to do us honour in matters affecting aerial navigation. Even the newly-created States of Europe seem to show more foresight and appreciation of the possibilities than is demonstrated here.

**An
Aerial
Clapham
Junction**

We have said that the newly-created States in Europe are showing considerable enterprise in matters affecting the air and the possibilities of the new transport. According to advices received in London, the Government of the new Republic of Czecho-Slovakia is manifesting considerable interest, and seems determined that Prague is to be the aerial Clapham Junction of Europe. An extensive international aerodrome has been organised there, with special landing grounds and facilities for commercial aircraft. The intention is to make Prague, with its highly favourable situation for the purpose, the junction for all the important European aerial transport services. In order to draw attention to the facilities to be afforded and to focus interest upon aviation generally, the Czecho-Slovak Aero Club is organising a great international aero exhibition, under the patronage of the President of the Republic, which will open on the 23rd of October.

Whether it is that the Latins and their close relations have more imagination than our comparatively stolid selves, or that they are really more clever in their anticipations of future progress, we do not profess to say, but it certainly seems to be the fact that the possibilities of commercial aviation are better appreciated in the South-East European countries than here. Czecho-Slovakia has but recently become a country, after passing through a far worse time in the War than any but the actually occupied countries. It is generally believed that she has no money and little organisation. Yet with rare prevision she seems to be satisfied that in the encouragement of commercial aviation lies one way to success as a nation. She happens to possess in Prague a capital which is peculiarly well placed for

a clearing-house for traffic to the Near and Middle East, and obviously intends that nothing shall be allowed to interfere with its fulfilment of its obvious purpose. Therefore, she has set to work early to organise a great aerial junction at the parting of the ways, and is adopting the best possible methods of advertising the fact. While we have no desire at all to belittle all that is being done, we could wish that a similar amount of enterprise allied to imagination were discernible here.

**The
Forthcoming
Air
Congress**

It is now definitely certain that the Air Congress, to which we made reference last week, is to be held in London. It is to be opened by Mr. Winston Churchill on the 23rd of next month, and will occupy three days. A point to which we referred in our previous article on the subject we are glad to see is answered in the announcement which has appeared in the public Press, and that is the one relating to proper publicity for the proceedings of the Congress. It is understood that it is to be a public affair, in that all the proceedings will be open to the Press. No more than this can be expected from the Air Ministry, and it lies now with the newspapers to see that adequate attention is given to the debates and conclusions of the Congress.

Questions relating to the cost of aerial transport will probably form the most interesting part of the proceedings of the Congress. These will be thoroughly thrashed out in the light of the latest experience of commercial services, and some very interesting conclusions ought to be reached. It is interesting to note that at present the estimated costs of air transport vary from 10s. to as much as 40s. per ton mile. The figures seem to be very high, but it should be pointed out that even assuming the last cost of 40s. per ton per mile, which provides for all costs of organisation, interest on capital and the renewal of all flying stock annually, it is still possible to show a profit on inland and foreign mail services at small fees, provided loads are guaranteed. According to the aviation correspondent of one of the London dailies, it is asserted that the cost of air transport need be no more than 1s. 6d. per ton mile, even with the engines and fuel of today. We do not know how the figure is obtained, or what it is supposed to include, so we will not presume to question it any more than to say that it would be interesting to know the basis of calculation. We need hardly say that we should like to believe it correct.

However, this is one of the matters which will, we hope, be thoroughly gone into by the Congress, and we doubt not that some very useful conclusions will be reached. It may be found that the low figure we have noted is based on false premises, but between 1s. 6d. and 40s. per ton mile is a wide gulf, and it scarcely needs pointing out that if a profit can be made on the latter figure, allowing that fees are competitive with other forms of transport of mails, then the future of the mail-carrying aeroplane seems to hold out excellent prospects.

The Trans-American Air Mail

THE first air mail across the U.S. was successfully inaugurated on September 8, the first machine, a De H., piloted by Mr. Randolph Page, carrying 400 lb. of mail, leaving Mineola, Long Island, at 6.41 a.m. The mail aeroplane safely arrived at San Francisco on the afternoon of September 11.

A Machine in Irish Sea

AN aeroplane flying from Chester to Baldonnel Aerodrome, Co. Antrim, fell in the sea on September 10 near Dalkey Island, Co. Dublin. The pilot and mechanic escaped injury, and were rescued from the island by local fishermen. The machine was badly damaged, and after being taken ashore was removed to Baldonnel.



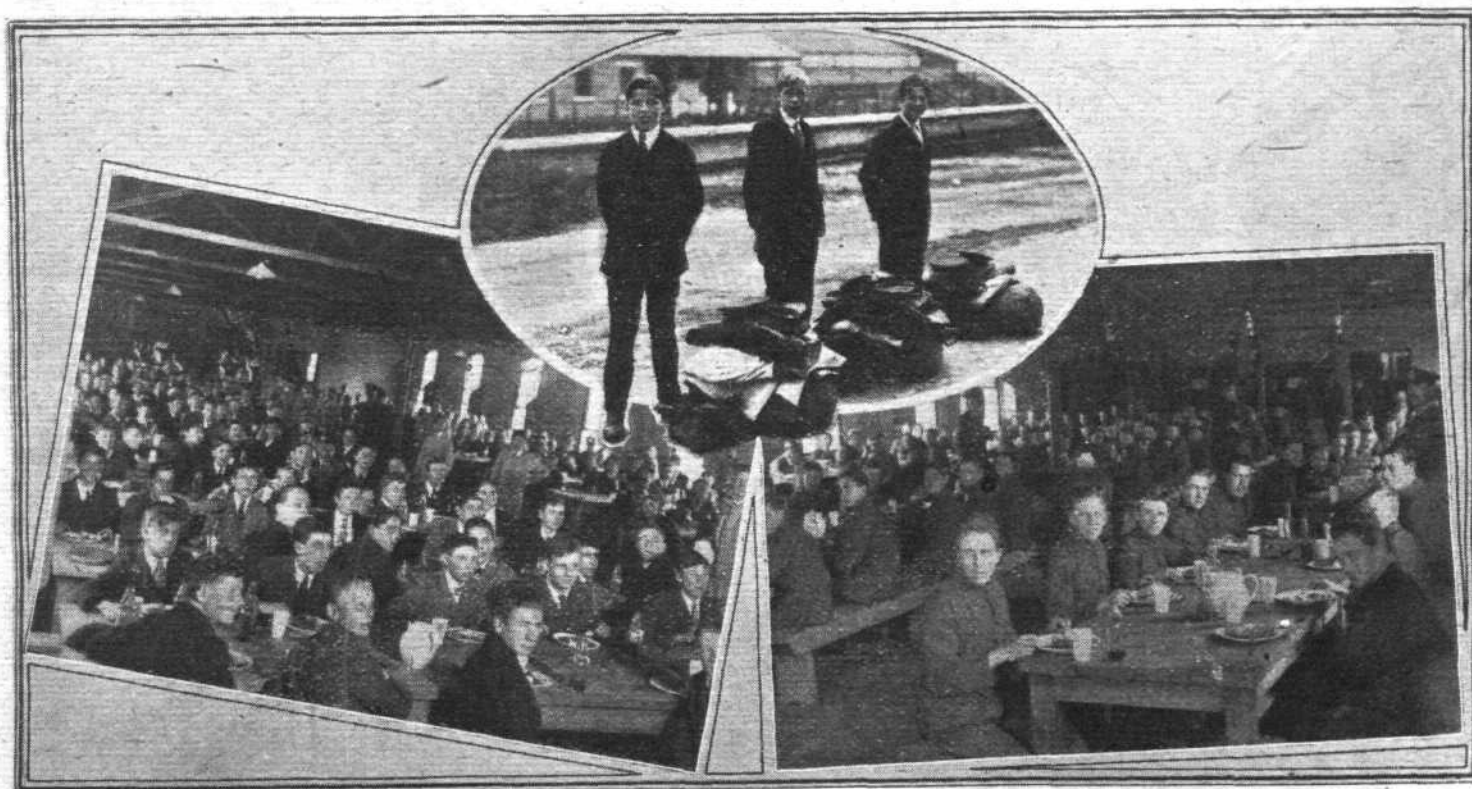
Of the many problems which arose during the War, not the least serious was that of an adequate supply of *personnel*. When war broke out the R.F.C. consisted of a mere nucleus of pilots, engineers and aircraftsmen, and so rapid and extensive were developments that almost throughout the whole period of the War the difficulty of training the *personnel* was even greater than that of supplying the *matériel* required.

Although the R.A.F. has been much reduced in size since the Armistice, and the requirements of peace-time are naturally different from those obtaining during a war, it is of the greatest importance that the training of the *personnel* should be commenced at an early age. In the senior service this has been realised for generations, and recently those responsible for the future of the R.A.F. have shown, by the establishment of training centres for boys and cadets, that they also are fully alive to the necessity of "catching them young." In this way, and in this way only, can the material available be moulded into that uniformity without sameness which makes for efficiency and *esprit de corps*.

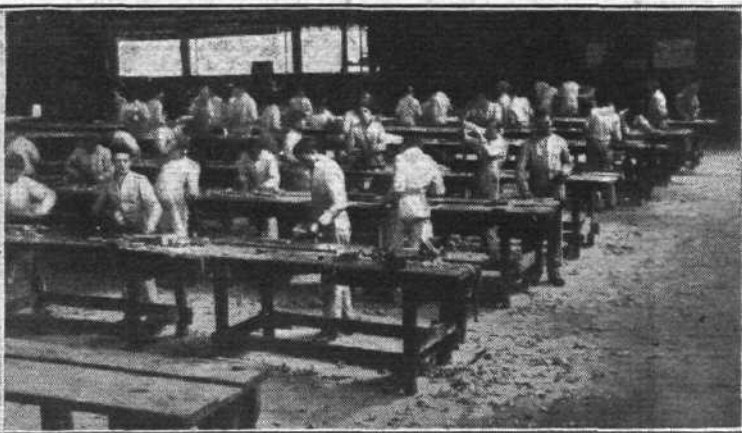
In order to ensure the thorough training of boy mechanics

and cadets, the Air Ministry some time ago established training centres for this purpose, among which mention may be made of that at Cranwell. Established by the R.N.A.S. during the War, Cranwell Air Station, near Caythorpe, Lincs., is laid out on a generous scale. In addition to a large aerodrome complete with sheds, workshops, and quarters for officers and men, it has an excellent wireless station which affords opportunity for training wireless operators for the R.A.F. It might be mentioned that the sheds at Cranwell include a huge airship shed over 700 ft. long, and capable of housing quite large modern rigid airships. At present this shed affords, we believe, a home for a number of "Super-Handleys," but should necessity arise the shed is there, practically ready to receive an airship.

The establishment at Cranwell is commanded by Air-Commodore C. A. H. Longcroft, C.M.G., D.S.O., who is assisted by Wing-Commander Killner, D.S.O., O.C. R.A.F., Boys, and Wing-Commander L. W. B. Rees, V.C., O.B.E., M.C., A.F.C., who commands the flying wing. Under the able guidance of these officers the Cranwell Training centre is rapidly becoming



AT THE R.A.F. TRAINING CENTRE AT CRANWELL: The upper photograph shows boy recruits with their newly-issued kit. The lower photographs show boy recruits and R.A.F. boys at dinner



AT CRANWELL TRAINING CENTRE : On the left, R.A.F. boys learning the intricacies of fitting. On the right, instruction in carpentry

a highly-efficient establishment, forming a self-contained community in which, as far as we were able to judge during a recent visit, instructors and pupils alike are animated by a keen desire to make Cranwell a station of which the nation may be proud. To those who may at present suffer from an attack of pessimism as regards the future of aviation a visit to the Cranwell Air Station acts like a tonic. Everyone concerned appeared enthusiastic and full of energy, the boys no less than the officers and N.C.Os.

The R.A.F. boys are enlisted at from 15 to 16½ years of age, and join up for a period of twelve years, the first three of which are spent at Cranwell. These are followed by seven years with the R.A.F. and two years in the reserve. On passing the "acceptance tests" the boys receive a pay of 1s. 6d. per day until the age of 18, when the pay is increased to 3s. a day. This is certainly not bad pay for a lad, considering that it is "all found," and as their proficiency increases the pay rises, until those who do well and become warrant officers are in receipt of 18s. a day. A certain number who have shown exceptional qualifications may be offered cadetships, in which case they are admitted to the adjoining Cadet College and trained as flying officers.

The physical standard insisted upon is high, and the medical examination to which the boys are subjected upon joining is very strict. This is thought to be the best policy, as saving time and money later on. When a new batch of boy recruits arrives they may sometimes have to spend several days at the

school before their medical examination. In that case they are shown the whole establishment and given a general idea of what their training will be like. As an instance of the spirit which animates the boys, mention may be made of a little incident which shows how happy the boys are in spite of the discipline inseparable from such an establishment. One evening an officer was going his usual round of the dormitories, when he heard a boy sobbing under his blankets. Going over to the bed, the officer asked the boy what was the matter, and if any of the other boys had been hitting him. The somewhat unexpected reply was that the boy had failed to pass his medical examination, and tomorrow he would have to go home!

After being finally accepted and attested, the boys are divided into two groups—according to their preference and previous training, if any—metal workers and carpenter-riggers. In the spacious workshops they are then trained by carefully graded courses, beginning with the most elementary work, and capable, when passing out, of any job within the sphere of their particular trade. Although made by boys who had only been at Cranwell for a short time, many of the pieces of work inspected were of excellent workmanship, and, in years to come, the careful training given at Cranwell cannot fail materially to benefit the Royal Air Force.

Physical exercise and games of all sorts are compulsory, and excellent facilities exist for bathing, such as swimming-baths, etc., in which the boys take a great delight. Indoors



AT CRANWELL TRAINING CENTRE : The upper illustration shows R.A.F. Cadets receiving instruction in the theory of wireless. On the left, Cadets practising wireless telephony, and on the right, Cadets learning to receive wireless messages

also great care has been taken to ensure the welfare of the boys, there being a series of reading-rooms, billiard-rooms and a gymnasium, not to mention a large cinema hall where subjects carefully chosen to suit the audience are thrown on the screen. The dormitories are large, airy and well lighted, and for use in winter are centrally heated.

The "inner man" is also well looked after, as an inspection of the kitchens showed. Three meals a day are served. At first a fourth one was served in the evening, but the boys requested that this be done away with, as they would rather have a more substantial tea, so as to leave them free to enjoy the evenings. This was accordingly done, and now all are happy.

In the adjoining Cadet College the equipment, although of a somewhat different nature, is as thoroughly complete as is the R.A.F. boys' training school. Here the cadets are taught flying, navigation, wireless and a thousand and one other subjects required of the modern flying officer. Here

also everything has been done to ensure the comfort and well-being of the cadets. Several tennis courts are provided, and the country around affords excellent opportunity for shooting, hunting, etc. We understand that efforts are now being made to form a club for the purchase and upkeep of horses, with a view to enabling the cadets, by a form of co-operative society, to enjoy the latter sport with a minimum of personal outlay and expense.

Altogether, Cranwell Training Centre is an establishment in which tuition is brought to a fine degree of efficiency, and the *esprit de corps*, which is so valuable in any service, is carefully built-up by the officers in charge, who, one and all, appeared to be exactly the right men in the right place, and who take the keenest interest in the development of the station. Although the R.A.F. is of much smaller proportions than it was during the War, its efficiency is being maintained, and with training centres such as Cranwell one need have no fears for the future of the *personnel* of the Royal Air Force.



AT CRANWELL TRAINING CENTRE : On the left the O.C. is seen inspecting a new contingent of boy recruits, and on the right R.A.F. boys at physical drill. Inset : Wing-Commander Kilner, O.C., R.A.F. boys

NOTICES TO GROUND ENGINEERS

(No. 7) Avro 504 and 536 Type Machines. *Upper Shoe Fitting for Engine Diagonal Strut (Part 100)*

ATTENTION is drawn to the above-mentioned fitting (Part 100) on Avro 504 and 536 type machines. Instances of the failure of this part have been discovered which, if undetected, might result in failure of structure.

All ground engineers operating should make a special examination of this fitting in all machines of these types under their supervision.

(No. 8) Fitting of Ballast in Aircraft

ATTENTION is drawn to the precautions necessary when fitting ballast in aircraft for trimming purposes. The ballast should take the form of bags filled with earth or sand, or of weights made of sheet lead. Bags of small shot or stones should not be used, as experience has shown that such bags wear out quickly and allow the filling to escape.

The bags or covers for the lead should be made of stout canvas or other strong material, and should be provided with adequate means of attachment, such as straps or strong cord, by which they can be secured in the cockpit.

In order to preclude all risk of accidents, such as fouling of controls or falling out of the aircraft, the ballast should always be securely attached in the cockpits.

(No. 9) Defects in Aircraft Timber

ATTENTION is drawn to a common defect found in aircraft timber, especially spruce, which is usually known as "Spiral" and sometimes erroneously as "Cross Grain." The existence of such a defect is due to the twisting of the tree during growth, and consequently cannot be determined by a casual examination of the straightness of the grain. It can, however, be detected by closely examining the direction and inclination of the wood fibres. It is usually most apparent on the "flower" side of the grain, and takes the form of small

resin channels of a brownish colour, running at an inclination to the axis of the strut or spar, as the case may be.

A slight inclination is of no disadvantage, but when the slope is great the timber is liable to break off short. An indication of the amount of slope, which, from experience, has been found to be satisfactory, is roughly when the inclination of the fibres is not more than 1 in 15.

The defect is more readily found by means of splitting the timber, the angle of the split giving the true slope of the fibres, and when making new timber parts for replacement it is recommended that the part be made slightly longer, to allow for a short piece to be cut off for splitting purposes.

When making such tests the split should be made in two directions :—

- (1) In line with the grain, and
- (2) At right angles to it.

Examination for Aviation Ground Engineers

Examinations of candidates desiring to become certified ground engineers (aircraft or engines) will be held at the following centres during September and October :—

London, Wed. Sept. 29; Bristol, Tues. Sept. 21; Birmingham, Wed. Sept. 22; Manchester, Thurs. Sept. 23.

London, Wed. Oct. 13 and Wed. Oct. 27; Leeds, Tues. Oct. 19; Newcastle, Wed. Oct. 20; Glasgow, Thurs. Oct. 21.

The examinations may be partly written, partly oral and partly practical. They will be based on the syllabus outlined in Section 4 of the Air Navigation Directions, 1919.

Candidates desiring to be examined can obtain application forms from the Secretary, Air Ministry, London, W.C.2, and should submit their completed forms of application, accompanied by a fee of 5s., at least seven days prior to the date on which examination is desired. Candidates should also state at which of the above places they wish to be examined.

A Parachute Record

FROM Arcadia, Fla., comes a claim for a world's record on behalf of Lieut. Arthur G. Hamilton, a U.S. Army pilot,

who is said to have dropped 20,900 feet by parachute recently. He used a double parachute, the second portion being released as he neared the ground.

COMMERCIAL AVIATION

The London-Continental Services

FROM a very small beginning, little more than a year ago, regular air services have increased in number and magnitude until today they are beginning to play quite an important part in our intercourse with other nations. Even so, their present importance is infinitesimal in comparison with what it will be in the future. The present services form a small beginning only, but it is an old saying that *c'est le premier pas qui compte*, and the experience now being gained will be invaluable as a foundation for the network of commercial air routes which before many years will encircle the globe.

By way of showing, in as compact and generally useful a form as possible, the doings of the commercial air services now being run regularly between London and Paris, Brussels, and Amsterdam, we are commencing, with this week's issue of **FLIGHT**, the publication of tables, compiled from information sent out by the Air Ministry, giving the numbers of flights made on the three routes mentioned above. These include the regular services only, and not any isolated flights made by private individuals or firms. Another column gives the number of passengers carried on each of the three routes during the week. The number of machines which carried goods and/or mails is also stated. In this connection it should be pointed out that where the figures given in the third and fourth columns do not add up to the same total as that given in the first column this is due to the fact that some machines carry passengers only, some carry goods and some mails, and some again carry passengers as well as goods and mails. Column 5 should be of particular interest in showing the number of journeys completed. The remaining columns give the average flying times on each route during the week, as well as the fastest times made and the identity of the machine which made it, and finally the last column contains a list of the types and numbers of machines used on each route.

Although we do not claim that the tables are perfect, we do think that they include all the information which is of general interest, and it is only in the matter of accuracy that we feel bound to make reservations. In some cases it is not possible to obtain reliable figures of the times of departure and arrival. This applies especially to the times of departure from foreign countries. These are not always stated in the Air Ministry communications, due no doubt to the difficulty of obtaining them promptly from abroad. This, however, is a matter which will improve as time goes on, and as such flights are not included in the averages given, they do not materially affect the general results, which are, after all, the most interesting and instructive. We are naturally anxious to make these tables as perfect as possible, and would ask the companies engaged in carrying out regular air services to give us their assistance in keeping us informed of their doings from week to week in order to ensure maximum accuracy. Any suggestions for the improvement of these summarised tables will be appreciated.

Route.	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by :	Type and No. (in brackets) of Machines Flying.
			Mails	Goods				
FLIGHTS BETWEEN AUGUST 22 AND AUGUST 28, INCLUSIVE.								
Croydon-Paris ...	22‡	57	12	12	22	h. m. 2 5	Airco 18 G-EAUF (2h.) ...	A.9 (5), A.16 (2), A.18 (1), B. (1), G. (2), N. (1), V. (1).
Paris-Croydon ...	26§	59	4	9	26	2 49	DH.4 G-EAMU (2h. 14m.)	A.4 (1), A.9 (4), A.16 (3), A.18 (1), B. (1), G. (2), H.P. (1), N. (1), Sa. (1), V. (1).
Cricklewood-Paris ...	10	55	—	5	9	2 50	Spad F-CMAV (2h. 15m.)	A.9 (1), H.P. (6), Sp. (1).
Paris-Cricklewood ...	8||	29	2	4	8	3 45	Spad F-CMAV (3h.) ...	B. (1), H.P. (6), Sp. (1).
Croydon-Amsterdam ...	7	4	—	7	6	3 22	Airco 9 G-EAPU (2h. 54m.)	A.9 (4), A.16 (1).
Amsterdam-Croydon ...	8	6	4	—	7	2 20	Airco 16 G-EASW (2h. 6m.)	A.9 (4), A.16 (1).
Cricklewood-Amsterdam	5	2	1	1	?	?	—	A.9 (3), H.P. (1).
Amsterdam-Cricklewood	4	3	2	1	4	3 6	Airco 9 G-EATA (2h. 50m.)	A.9 (3), H.P. (1).
Croydon-Brussels ...	1	2	—	—	—	—	—	A.4 (1) (? landed en route.)
Brussels-Croydon ...	—	—	—	—	—	—	—	—
Cricklewood-Brussels ...	11	9	4	2	9 (?)	3 48	—	A.4 (4), A.9 (4), G. (1), H.P. (1).
Brussels-Cricklewood	5	6	2	—	5	2 39	—	A.9 (4), H.P. (1).
Totals for week	107	232	31	41	97 (apx.)			

FLIGHTS BETWEEN AUGUST 29 AND SEPTEMBER 4, INCLUSIVE.

							h. m.			
Croydon-Paris ...	...	23	50	10	12	19	2 20	Airco 9 G-EAPL (1h. 35m.)	A.9 (5), A.16 (3), A.18 (1), B. (2), G. (3), Sp. (1), V. (1).
Paris-Croydon ...	...	25	64	3	8	21	2 52	Airco 18 G-EAUF (2h. 20m.)	A.9 (5), A.16 (3), A.18 (1), B. (2), G. (2), N. (2), Sp. (1), V. (1).
Cricklewood-Paris	...	12	39	—	5	12	3 7	Breguet F-CMAB (2h. 30m.)	—	
Paris-Cricklewood	...	11	50	3	5	9 (?)	3 30	Breguet F-CMAB (3h. 10m.)	A.9 (1), H.P. (11).	
Croydon-Amsterdam	...	6	3	2	5	6	3 8	Airco 9 G-EAQN (3h.)	H.P. (8)	
Amsterdam-Croydon	...	9	6	5	4	7	2 53	Airco 9 G-EAQN (2h. 20m.)	A.9 (5).	
Cricklewood-Amsterdam	2	1	1	1	?	?	—	—	A.9 (6).	
Amsterdam-Cricklewood	2	1	—	—	2	—	—	—	A.9 (1), H.P. (1).	
Croydon-Brussels	...	—	—	—	—	—	—	—	A.9 (1), H.P. (1).	
Brussels-Croydon	...	—	—	—	—	—	—	—	—	
Cricklewood-Brussels	...	8	4	4	1	6	2 54	D.H. 4 O 12 (1h. 45m.) ...	A.4 (2), A.9 (3), G. (1), H.P. (1).	
Brussels-Cricklewood	...	6	18	—	1	5 (?)	3 29	Airco 9 G-EAUI (3h. 5m.)	A.9 (3), G (1), H.P. (1).	
Totals for week		...	104	236	28	42	87 (apx.)			

							h. m.		
Croydon-Paris ...	29	64	12	16	29	2 35	Airco 16 G-EAPM (2h. 5m.)	A.4 (1), A.9 (3), A.16 (3), A.18 (2), G. (3), N. (3), Sa. (1).	
Paris-Croydon ...	28	51	3	15	26	2 44	Airco 16 G-EAPM (2h.)	A.4 (1), A.9 (3), A.16 (3), A.18 (2), B. (1), G. (3), N. (3), Sp. (1).	
Cricklewood-Paris ...	13	68	—	5	13	3 0	Breguet F-CMAB (1h. 25m.)	B. (1), H.P. (8), Sp. (1).	
Paris-Cricklewood ...	11	43	2	5	10	3 30	Breguet F-CMAI (2h. 39m.)	B. (1), H.P. (7).	
Croydon-Amsterdam ...	9	4	—	9	9	3 8	Airco 9 G-EAGY (2h. 37m.)	A.9 (5).	
Amsterdam-Croydon ...	6	7	6	4	6	2 56	Airco 9 G-EAGY (2h. 6m.)	A.9 (4).	
Cricklewood-Amsterdam	3	2	2	2	2 (?)	—	—	A.4 (1), A.9 (1).	
Amsterdam-Cricklewood	5	1	1	1	5 (?)	3 44	—	A.9 (2).	
Croydon-Brussels ...	1	4	—	1	1	2 26	—	A.16 (1).	
Brussels-Croydon ...	1	—	—	—	—	—	—	A.16 (1).	
Cricklewood-Brussels	8	7	6	4	7 (?)	2 45	Airco 9 G-EAUP (2h. 3m.)	A.4 (3), A.9 (2), B. (1).	
Brussels-Cricklewood ...	6	8	2	1	5	2 48	Airco 9 G-EATA (2h. 10m.)	A.4 (2), A.9 (2), B. (1).	
Totals for week ...	120	259	34	63	113				

The following is a list of firms flying services between London and Paris, Brussels, etc., etc.:—Air Transport and Travel; Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

"The post left at Abu Jisrah was later attacked by 300 insurgents, who fled on the appearance of an aeroplane, which attacked them with bombs and machine-gun fire.

THE "PIONEER" SINGLE-SEATER SPORTPLANE

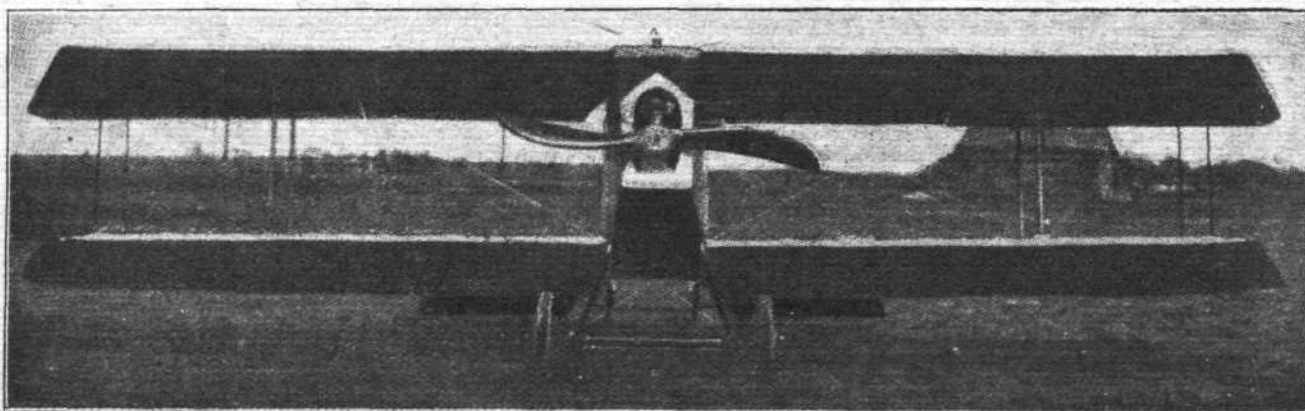
TRIAL flights were carried out a short time back, at Long Island, N. Y., with a small single-seater sportplane constructed by the Pioneer Aircraft Corp., and we give herewith a few particulars, together with scale drawings and illustrations of this machine. The "Pioneer" was designed by the above company's engineer, Harry Herzog, primarily as a sporting cross-country model, selling at \$2,000, but it is also suitable for commercial work, such as mail and light freight work, advertising or exhibition flying.

During its first trials—which were carried out by Lieut. Bruce Eytinge, late R.A.F.—it demonstrated good flying qualities, being very stable and easy on the controls. It had a fast climb, quick take-off, and an exceptionally flat gliding angle, whilst its landing speed was as low as 25 m.p.h. The average run after first touching the ground was only 60 ft.—no braking devices or skids being employed. The range of action at cruising speed (40 m.p.h.) is 2½ hrs., the petrol consumption being 4 gals. per hour. These qualities,

is located near each wing tip. Ailerons are fitted to the top plane only. The wings are set at an angle of incidence of 6°.

The tail *groupe* is, to a certain extent, unusual, in that two rudders are employed, and its distance from the main planes is extremely short. The horizontal stabilising surface is, however, of large proportions, and is of the double cambered type, set at 0° incidence in the line of thrust. The elevators are also large, and are, as usual, hinged to the trailing edge of the tailplane. The two balanced rudders are located at the end of each side of the *fuselage*, and are hinged to triangular vertical fins, mounted above and below the *fuselage*. Under each rudder is fitted a tail skid.

The *fuselage*, which is comparatively wide and deep (max. 2 ft. and 3 ft., respectively), is of rectangular cross section, fairly well streamlined, tapering to a horizontal knife-edge at the stern. It is of three-ply veneer construction throughout.

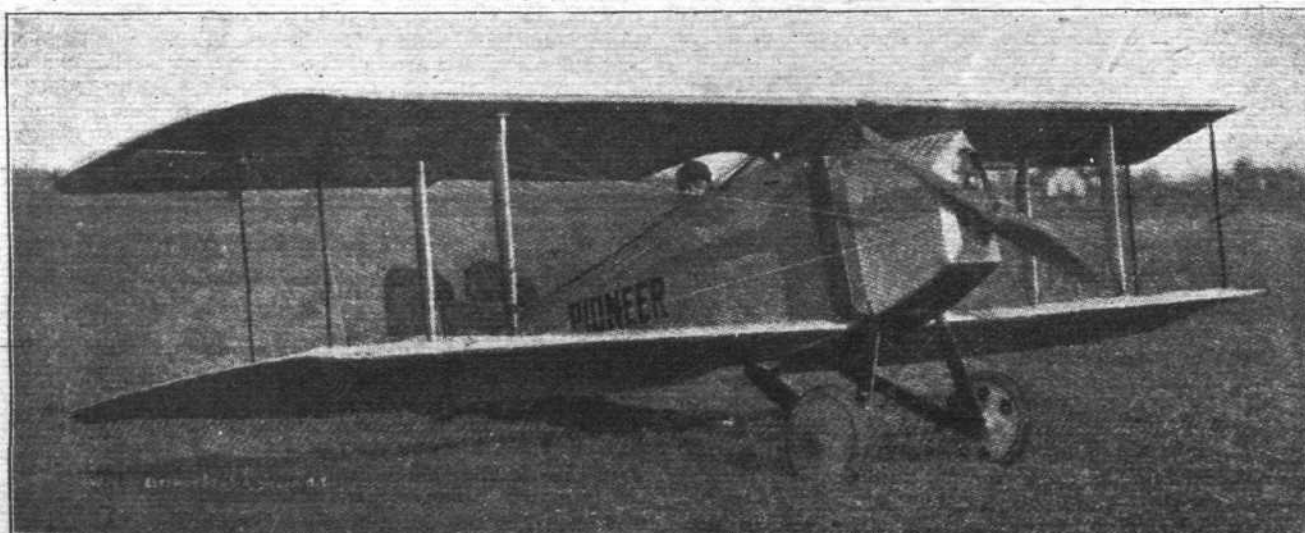


THE "PIONEER" SINGLE-SEATER SPORTPLANE: Front view

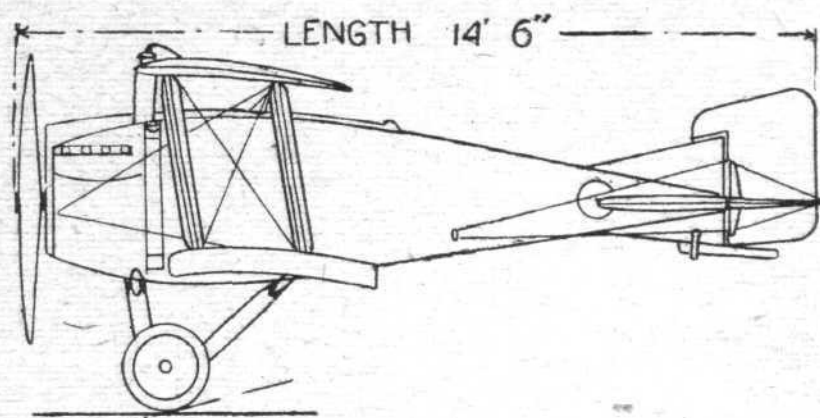
together with its small size and light weight, render it eminently suitable as a sporting one-man 'plane.

The "Pioneer" Sportplane is a tractor biplane, fitted with a 40 h.p. 4-cyl. vertical, 8 valve-in-head water-cooled "Pioneer" engine, and having a span of 24 ft., and an overall length and height of 15 ft. 6 ins. and 6 ft. 9 ins., respectively. The main planes are of equal span top and bottom, and are built up in four sections, the two top ones, which are without dihedral angle, being mounted a short distance above the *fuselage* on a pylon of inverted V-struts, and the lower sections, which are set at a dihedral angle of 6°, are attached to the lower *longerons* of the *fuselage*. The top plane is staggered forward 5 ins., and is separated from the lower by a pair of streamlined interplane struts each side of the *fuselage*. An extra pair of tubular struts

The engine is carried on bearers supported by the first and second transverse bulkheads, which are of sheet steel. Mounted on the top of the second bulkhead is the radiator, which is also anchored to the leading edge of the top plane. Another method of mounting the radiator may be seen in one of the accompanying illustrations, where two long units are mounted on each side of the *fuselage*. The pilot's cockpit is comfortable and roomy, and is located at the trailing edge of the planes; where a very good view in all directions is obtained. The control is of the stick and rudder bar type, and in front of the pilot is an instrument board containing an engine revolution counter, altimeter, oil-gauge, water temperature gauge, and ignition switch. The engine is well balanced, and gives little, if any, vibration, and weighs 150 lb. It drives a Paragon tractor screw, 5 ft. pitch by

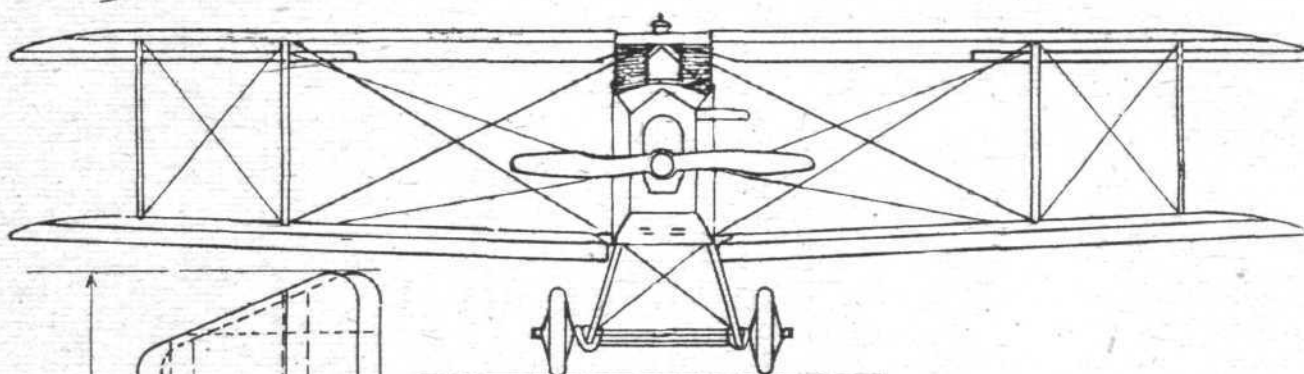


THE "PIONEER" SINGLE-SEATER SPORTPLANE: Three-quarter front view, showing radiators mounted at the side of the *fuselage* instead of above

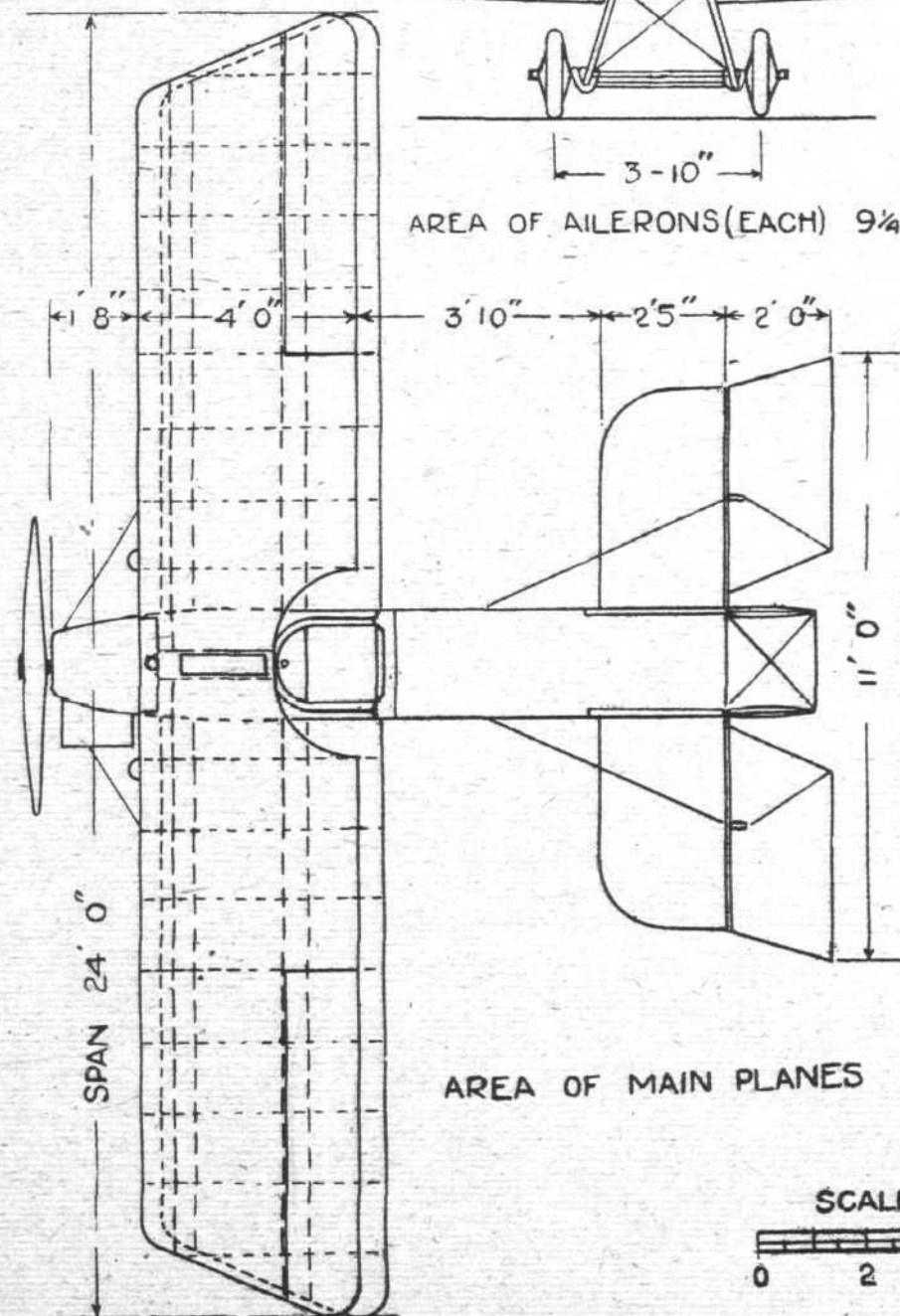


AREA OF RUDDERS
4 1/4 SQ. FT. (EACH)

AREA OF FINS
1 3/4 SQ. FT. (EACH)



AREA OF AILERONS (EACH) 9 1/4 SQ. FT.



AREA OF ELEVATORS
15 SQ. FT.

PIONEER
TYPE 'A' SPORT PLANE
40 H.P. PIONEER ENGINE

AREA OF TAIL PLANE
19 1/2 SQ. FT.

AREA OF MAIN PLANES 166 SQ. FT.

SCALE OF FEET



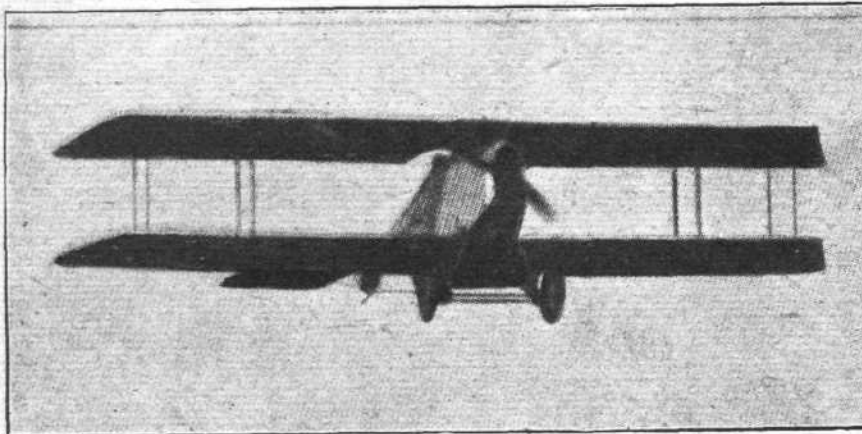
6 ft. 6 ins. diameter, direct at 1,500 r.p.m. Atwater-Kent battery ignition is employed, and the lubrication is by splash feed and a constant spray by means of a spur-gear

oil pump. A Zenith carburettor is fitted, petrol being fed by gravity from the 10-gal. tank located between the pilot and the engine, and separated from the latter by a fireproof asbestos wall.

The landing chassis is of the ordinary V-type, and calls for no special comment. We understand the construction and workmanship of this little machine is of high quality, and a factor of safety of 8 is employed.

The general characteristics of the "Pioneer" Sportplane are:—

Span..	..	24 ft.
Chord ..	..	4 ft.
Gap ..	..	3 ft. 3 ins. to 3 ft. 8 ins.
Stagger ..	..	5 ins.
Overall length ..	..	14 ft. 6 ins.
Overall height ..	..	6 ft. 9 ins.
Area of main planes	..	166 sq. ft.
Weight (empty) ..	..	480 lb.
Weight (fully loaded)	..	800 lb.
Speed range ..	..	25-70 m.p.h.
Radius of action ..	..	2½ hrs.
Loading per sq. ft...	..	4.8 lb.
Loading per h.p. ..	..	20 lb.
Engine, 40 h.p. "Pioneer"	..	4-cyl. vert.



The "Pioneer" Single-Seater Sportplane: The machine in flight

THE AIR MINISTRY COMPETITIONS

Amphibians Make a Start*

AFTER several delays, due to some of the competing machines not being ready in time, the Air Ministry Competitions for amphibian machines have commenced at Martlesham Heath aerodrome, near Woodbridge, Suffolk. The Vickers "Viking," 450 h.p. Napier Lion engine, was the only machine to arrive at the aerodrome on time, and this machine has now made an excellent start, piloted by Capt. Cockerell, by completing her reliability and economy tests. These include, it may be remembered, a flight of 3½ hours' duration at a speed of not less than 70 knots and at an altitude of at least 1,000 ft., carrying on board sufficient fuel for a distance of 350 nautical miles, in addition to the useful load. The economy test is flown in conjunction with the reliability test, the same

formula as that for the land machines ($\frac{W}{G}$) being used. In this W represents the weight in pounds of the useful load carried (this does not include the weight of crew and fuel) and G the number of gallons of fuel consumed during the 3½ hours' flight. The figure obtained by the Vickers "Viking" in this test is $\frac{W}{G} = 10.4$, an excellent figure which

speaks well for the cleanness of the design of the machine, no less than for the fuel economy of the Napier Lion engine. This flight was carried out on Tuesday, September 7. On the same day Capt. Cockerell put the "Viking" through the self-controlled flight (flying for three minutes at cruising speed without the use of any controls), and the glide (switch-

ing off the engine and letting the machine take up its gliding angle without the use of the elevator controls). On the following day, September 8, the Vickers "Viking" went through her high-speed test, in which she attained an average speed of 105.2 knots (121 m.p.h.). In attempting the getting-off test, however, the land undercarriage failed, letting the machine down on to the boat hull and causing considerable damage to the port lower plane and wing tip float. The machine has now been repaired, and, as soon as favourable weather permits, will resume her tests.

The Fairey float seaplane, 450 h.p. Napier Lion engine, has also arrived at Martlesham (by air) piloted by Lieut. Colonel V. Nicholl, D.S.O., and will similarly commence tests at the first opportunity. The Supermarine flying boat, Rolls-Royce Eagle engine, was flown from Southampton to Martlesham, with a brief stop at Felixstowe seaplane station, in 2½ hours, by Capt. J. Hoare. By the time these notes appear in print all three machines will probably be busy doing their tests. The Saunders "Kittiwake," two 200 h.p. A.B.C. "Wasp II" engines, has not arrived at the time of writing, but is expected some time during this week.

Competition for Land Machines

In the table of performances, published last week as issued by the Air Ministry, a few errors should be corrected. The figures relating to the cruising speed of the Handley Page W 8 should read 80 and 84, respectively, instead of 84 and 88 respectively. The landing figure for the Austin "Kestrel" should be 204 yards instead of 244 yards. The mistake was not ours, the figures published being those issued officially by the Air Ministry.

The Forthcoming Civil Aviation Conference

As mentioned in our issue of last week, the Air Ministry is making arrangements for a three days' conference, which will be held in London in the second week in October and will be opened by Mr. Churchill. Papers will be read relating to technical, civil, and Service aeronautics, and it is hoped that discussions of importance will follow.

The main object of the conference will be to bring forward subjects the discussion of which will help civil aviation and encourage the use of aircraft for transport. The conference will be confined to those to whom the Air Ministry issues invitations.

Honours for Australian Fliers

FROM Melbourne comes word that H.M. the King, on the recommendation of Mr. Hughes, has approved of the award of the Air Force Cross to Lieut. Parer and Lieut. McIntosh in recognition of the flight from England to Australia.

A Lapland Air Service

ADVICES received by Handley Page, Ltd., state that the most northerly air service in the world has been established between Porjus in Sweden and Suorvajaure in Lapland. At Porjus is situated the great Swedish electrical power station

which provides the motive power for the Swedish electrical railway system. Suorvajaure lies about 60 miles to the north-west of Porjus, and is a deserted spot without any means of communication other than the regular air service which has now been established. It is, however, important in connection with its water power which is now being developed. The aircraft not only carry the mails and passengers between the two places, but materials required by the contractors engaged in erecting the power plant.

Bremen an Air Port

IN view of their success in their first venture in erecting aerodrome buildings, which, costing 120,000 marks, were promptly leased to the Lloyd Luft-Dienst and Sablatnig Gesellschaft and are now earning 10 per cent. on the investment, the citizens of Bremen are at work on a much larger scheme, with the object of making a complete air port. It is reported that eleven million marks have been subscribed for the project, which includes an extensive aerodrome, custom house, hangars, repairing shops, signalling apparatus and every improvement that German ingenuity can devise to assist aerial navigation. Incidentally Bremen is out to beat Hamburg in the race for the leading German air port.

ROYAL AERONAUTICAL SOCIETY NOTICES



Library.—The following books have recently been received and placed in the library: "Aerial Navigation," by J. E. Dumbleton; "The Advancement of Science," 1920; "The Aeroplane Handbook," by A. J. Swinton; "In the Clouds above Baghdad," by Lieut.-Col. J. E. Tennant; "Airscrews in Theory and Experiment," by A. Fage.

Finance.—The half-yearly audit has just been completed, and the accounts show, as was anticipated, a deficit approximately equal to the amount of subscriptions outstanding. It is hoped to publish the balance sheet in an early issue of the Journal.

Lectures.—The following lectures have been arranged for the next session commencing on October 7. The lectures will in each case take place in the theatre of the Royal Society of Arts, John Street, Adelphi, commencing at 5.30 p.m. An abstract only will be read in order to permit of a full discussion. Where possible a summary will be published previously in the Aeronautical Journal, the full paper and discussion being printed afterwards as heretofore.

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|--------|------------------------------------|---|
| Oct. 7 | Maj.-Genl. Sir F. H. Sykes, G.B.E. | "Civil Aviation." |
| " 21 | Squad.-Ldr. R. M. Hill, R.A.F. | "A Comparison of the Flying Qualities of Single and Twin-engined Aeroplanes." |

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| Nov. 4 | H. Ricardo | "Possible Developments in Aircraft Engines." |
| Nov. 18 | | |
| Dec. 2 | | |
| " 16 | Col. Flack | "The Human Machine in Relation to Flying." |
| Jan. 20 | Lord Montagu of Beaulieu | "The Cost of Air-Ton Miles compared with other Forms of Transport." |
| Feb. 3 | G. Dobson | "Meteorology." |
| " 17 | F. Handley Page | "The Handley Page Wing." |
| March 3 | J. W. W. Dyer | "Airship Fabric." |
| " 17 | Capt. D. Nicolson | "Flying-boat Construction." |

Air Conference.—In response to a request from the Air Ministry, arrangements are being made for the reading of a paper on "The Technical Aspects of Service and Civil Aviation," by a Member of the Society at the Air Conference, to be held at the Guildhall during the third week in October.

Election of Members.—The following Members have been elected to the Scottish Branch:—*Members:* W. Sholto Sheppard, R. G. Leckie. *Student:* A. MacFarlane Cairns.

W. LOCKWOOD MARSH,
Secretary

PREVENTION AND CURE OF "SHELL SHOCK"

THE constitution of the War Office Departmental Committee which has been set up by the Secretary of State for War, to inquire into the expert knowledge derived from the experiences of the late War in regard to shell shock, is officially announced as follows: Lord Southborough, G.C.B., G.C.M.G., G.C.V.O., K.C.S.I., Chairman; Temporary-Surgeon Lieut. Thomas Beaton, O.B.E., M.D., M.R.C.P. (representing the Admiralty); Dr. J. L. Birley, C.B.E., F.R.C.P. (representing the Air Ministry); Dr. H. Bond, C.B.E. (representing the Board of Control); Dr. Maurice Craig, M.A., M.D., F.R.C.P. (representing the Ministry of Pensions); Wing-Com. M. W. Flack, C.B.E., or Wing-Com. J. McIntyre, M.C. (representing the Air Ministry); Dr. Kaye (representing the Ministry of Pensions); Dr. Hamilton C. Marr, M.D. (representing the Board of Control

for Scotland); Surgeon-Com. E. T. Meagher, R.N. (representing the Admiralty); Brig.-Gen. J. G. S. Mellor, C.B., C.M.G., K.C.; Sir F. Mott, F.R.S., M.D.; Major A. D. Stirling, D.S.O., and Col. W. A. Turner, C.B., M.D. (Army Medical Dept.); Stephen Walsh, Esq., M.P., Major W. Waring, M.P., and Major W. R. Galwey, O.B.E., M.C. (Sec.).

The committee is appointed "to consider the different types of hysteria and traumatic neurosis, commonly called 'shell-shock,' to collate the expert knowledge derived by the service medical authorities and the medical profession from the experience of the war with a view to recording for future use the ascertained facts as to its origin, nature and remedial treatment, and to advise whether, by military training or education, some scientific method of guarding against its occurrence cannot be devised."

The Next F.A.I. Congress

At the last meeting of the Federation Aeronautique Internationale at Geneva on September 11, it was decided that the next conference should be held at Madrid in October, 1921.

It was decided to approve the affiliation of the Aero Club of Czechoslovakia.

The President, Prince Roland Bonaparte, presented to representatives of the Aero Club of Belgium a plaque commemorating the noble conduct of Belgium during the War.

Mr. Koolhoven and Aviation

WITH reference to the article published in our issue of August 19, 1920, entitled "Our Designing Staffs and their Future," we have received from Mr. F. Koolhoven a letter in which he points out that he still takes the keenest interest in aviation in general, and in particular in that of this, his adopted country. Mr. Koolhoven says he merely left this country and aviation because he could not make a living out of aviation. As things are at present, it is impossible for Mr. Koolhoven to repeat his performance of the years 1909-14, which were devoted to aviation at his own expense. It is good news to learn that he has kept together the majority of his designing staff, which is now engaged upon motor-car design, and Mr. Koolhoven assures us that should the opportunity arise, he will lose no time in switching over to aeroplane design again.

By Air to Bucharest

ON September 12, at 8.30 a.m., a Handley Page machine piloted by Mr. Perry, and carrying Mr. R. Wright, a Manchester locomotive engineer, who has urgent business in Roumania, left Cricklewood for Bucharest. The machine stopped at Brussels for petrol, and was reported at Nurnberg at 4 p.m., and Vienna was reached the next morning. The exact nature of Mr. Wright's business is being kept secret, but it is understood that it is in connection with fuel for oil-burning locomotives. The machine was chartered through the Lepaerial Bureau, and it is stated that

the Foreign Office availed themselves of an offer by Mr. Wright to carry dispatches.

New Scandinavian Service

ACCORDING to the Christiania *Morgenblad* an Anglo-Norwegian Aerial Company is being formed with a view to establishing aerial traffic between Norway, Denmark, Hamburg, and London.

It is proposed that the service should run two or three times weekly in the winter and daily in the summer, and it is hoped to make a start this autumn between Christiania and London.

The share capital is 300,000 kroner, 200,000 kroner of which has been contributed by English firms and the rest by Norwegian. The technical director is M. Odd Henriksen, while the director of the goods service is Captain C. Frobisher.

Germany's Passenger Airships

FROM a rumour current in Paris it would appear that the Allies are to insist on their demand for the handing-over of the Zeppelin passenger vessels "Nordstern" and "Bodensee," by way of compensation for the seven rigid airships which were destroyed in their hangars after the Armistice. It is suggested that one vessel should be handed over to Great Britain and one to France.

British Pilots for Japan

THE scheme of the Japanese Government for a flying school appears to be going ahead, according to the *Nichi Nichi Shimbun*, which states that the Naval authorities have decided to engage thirty British naval aviators as instructors.

It is anticipated that they will arrive early next year, when the new aerodrome and school of instruction at Kasumigaura will be opened. The Government estimates the cost of setting up the new school at 6,000,000 yen.

Lieut. Roget's Tour of Europe

HAVING completed his tour of the Continental capitals, Lieut. Roget landed at Le Bourget on September 7. He arrived at Rome on September 1, and went on to Lyon on the 6th, whence he made the trip to Paris on the following day.



AIRSHIPS



THE STORY OF THE S.S. AIRSHIP (BLIMP)

BY RAFEX

THERE appear to be nearly as many claimants for the credit of "giving the S.S. Airship to the Nation" as there were to the invention of the tanks, and it may therefore be of interest to give what one believes to be an accurate account of its evolution.

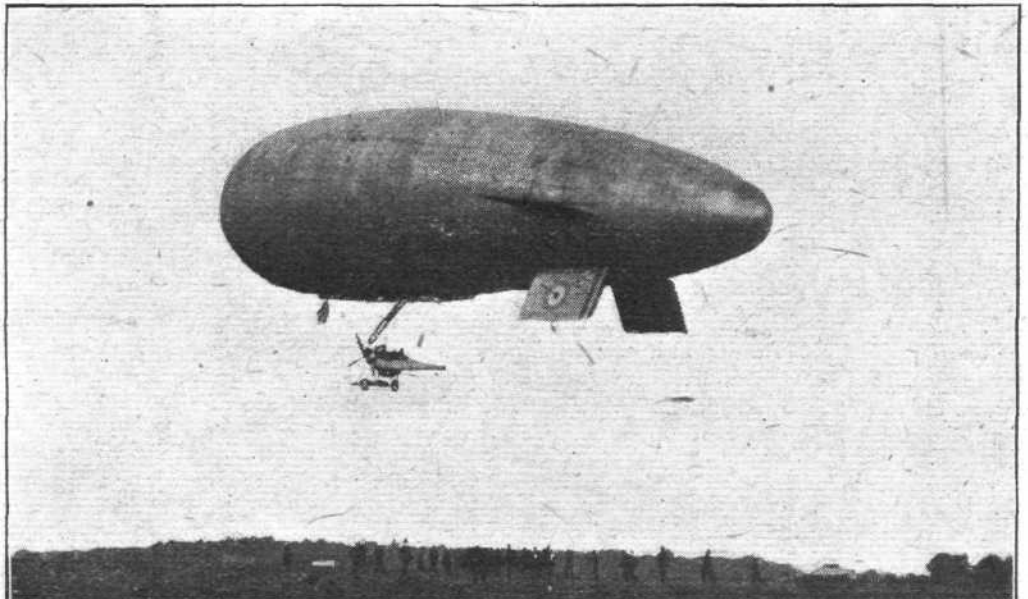
In the first place, the British airship service may almost be said to have had a constitutional tendency from birth toward the S.S. Airship, as they had always been mainly concerned with small airships of somewhat similar performance,

hour. As the Board of Admiralty were not at that time in favour of an airship programme, nothing eventuated until considerably later.

There is little doubt that the real credit for inaugurating the experiment from which the large fleet of S.S. airships was subsequently evolved rests with Lord Fisher. On February 28, 1915, he sent for Commander E. A. D. Masterman (as he then was), in charge of the Airship Section of the R.N.A.S., and gave instructions for the production of an

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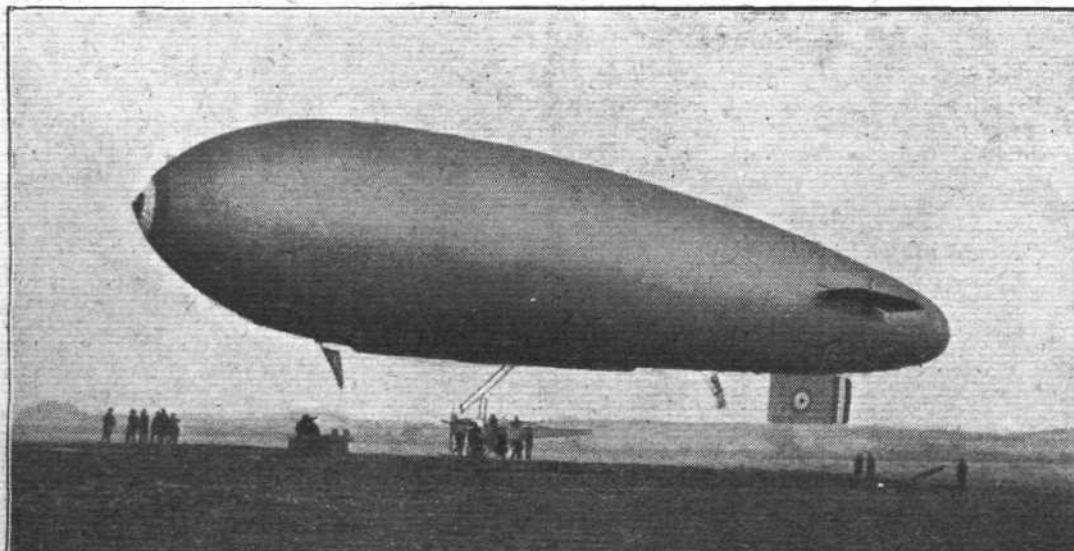
The original type of S.S., based on the first experimental ship, which was put into production from April, 1915, onward



and in many ways the S.S. was merely the logical outcome, when the actual need arose, of the Beta and No. 2 (Willows V).

Although the responsibility for the design and production of S.S.1, which will be dealt with presently, entirely belonged to members of the service, it should be recorded that during the spring of 1914 there was a lengthy correspondence between Mr. Holt Thomas and the Admiralty, in the course of which this gentleman urged the value of an airship to carry a crew of two for some eight hours, at a speed of 45-50 miles per

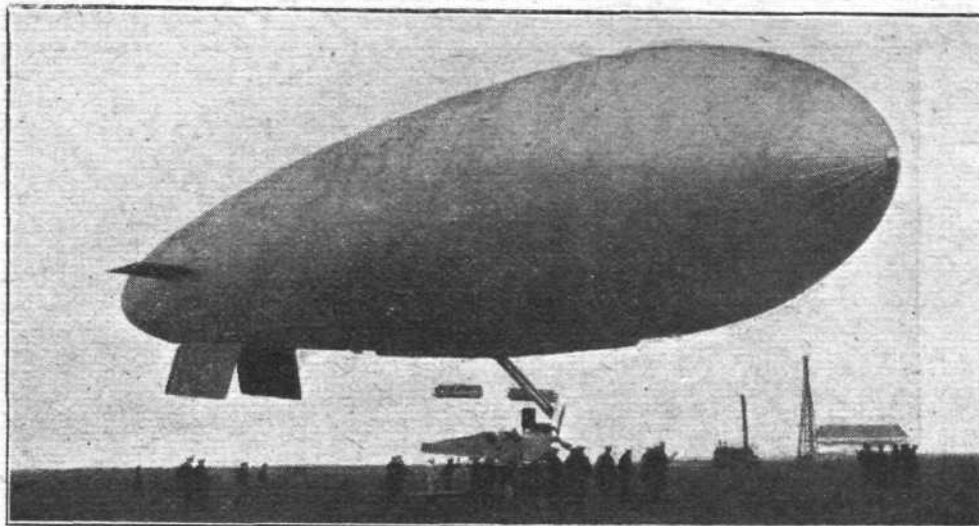
experimental airship suitable for searching for submarines in enclosed waters—such as the English Channel. In detail the airship was to have an endurance of about eight hours at full speed, carrying a crew of two, in addition to a wireless outfit with a range of 30 to 40 miles and bombs to a weight of about 160 lb. As she was to be capable of remaining out in all ordinary weathers, it was considered that the air-speed should approach as nearly as possible to 50 m.p.h., though it was realised that 45 m.p.h. would probably be the maximum



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A later type of S.S. fitted with a single vertical stabilising plane.

The Armstrong-Whitworth S.S., the first of which appeared in July, 1915, followed in 1916 by eight others. The engine is a 100 h.p. Green



attainable in practice. Great emphasis was laid on the airship being small and handy, and of the simplest possible design and construction, in order that a quantity could be produced in the shortest possible time.

The matter was referred to Kingsnorth—where the ever-to-be-regretted Commander N. Usborne was in charge. To whom belongs the credit of the idea it is now impossible to say, though it probably originated in the course of dinner in the mess, but it was at any rate suggested by someone that to comply with the condition of speed of manufacture no better method could be adopted than that of utilising with as little modification as possible the fuselage of an aeroplane instead of delaying production by designing a special car. It was at the same time decided to use the existing envelope of H.M.A. No. 2 (Willows V).

Accordingly, on March 6, 1915, No. 2's envelope was transferred from Farnborough to Kingsnorth.

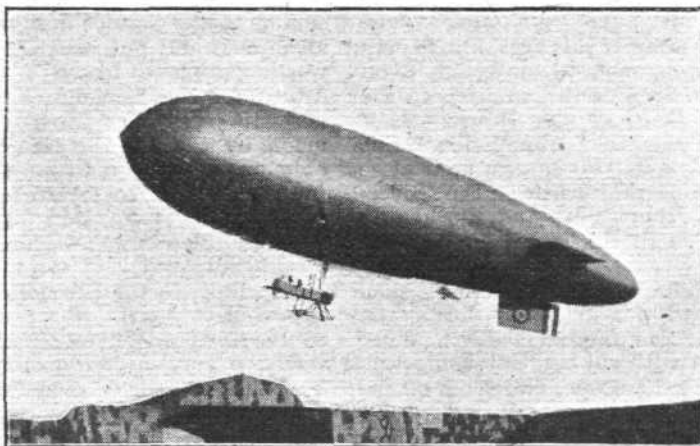
Meanwhile a B.E. 2c aeroplane—stated on reliable authority to be the identical machine used by Squadron-Commander Sippé in the aeroplane raid on Cuxhaven—was procured from somewhere, and arrangements were commenced for slinging the fuselage below the envelope. At the same time two firms

were asked to submit designs to fulfil the requirements—but of this more anon. The aeroplane was stripped of its wings and empennage, while an auxiliary blower was fitted below the gravity tank, and the ballonnet hose taken to the existing distributing valves to the forward and after ballonnets in

the envelope. No alterations were made in the envelope (the existing planes, valves and rigging being used) except for necessary alterations in the arrangement and length of the rigging to fit the new car.

The first flight took place on March 18, 1915, when the arrangement was proved on the whole to be satisfactory. It was, however, found that the nose of the envelope blew in, and this was therefore reinforced with a framing of cane similar to the ribs of an umbrella. It was also found that the "lift" was deficient to give the endurance required. The blower was therefore removed and a metal "scoop" fitted in rear of the propeller to take in air direct from the propeller

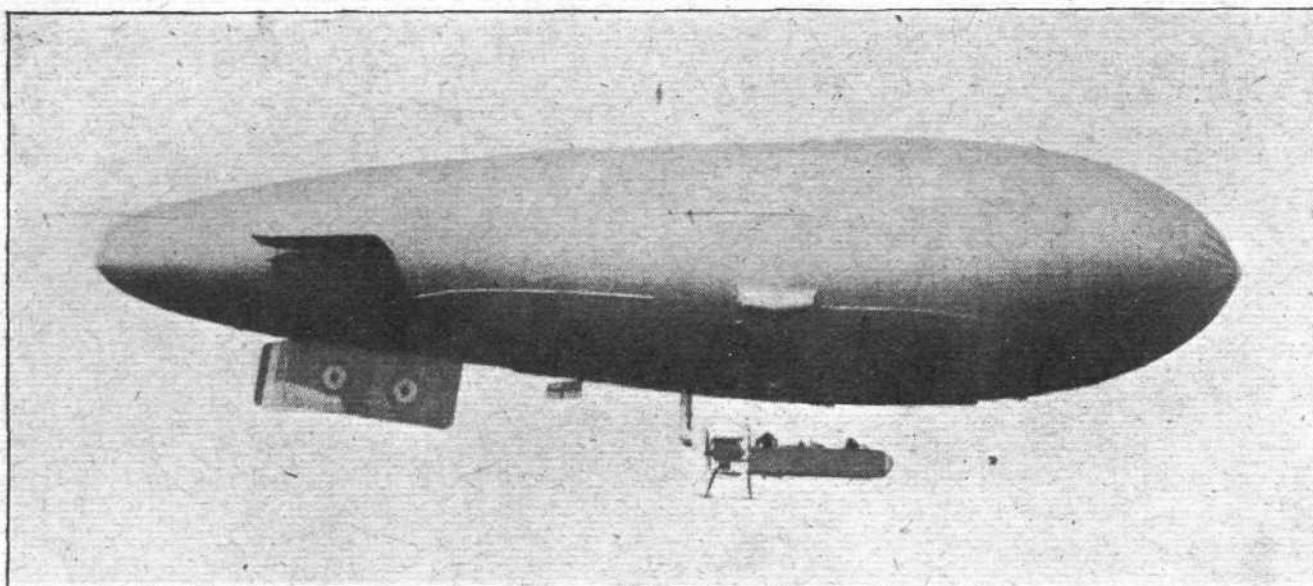
blast. The forward ballonnet was also done away with, though in future ships this feature was reintroduced. The only other alteration of importance was the conversion of the rudder and elevator from the balanced to the unbalanced type. It may perhaps be mentioned here that Lord Fisher



The "Maurice Farman" S.S., a pusher type produced during 1915-16, of which there were twelve



The car of the "M.F." S.S.



The S.S.P. (100 h.p. Green) produced in 1916

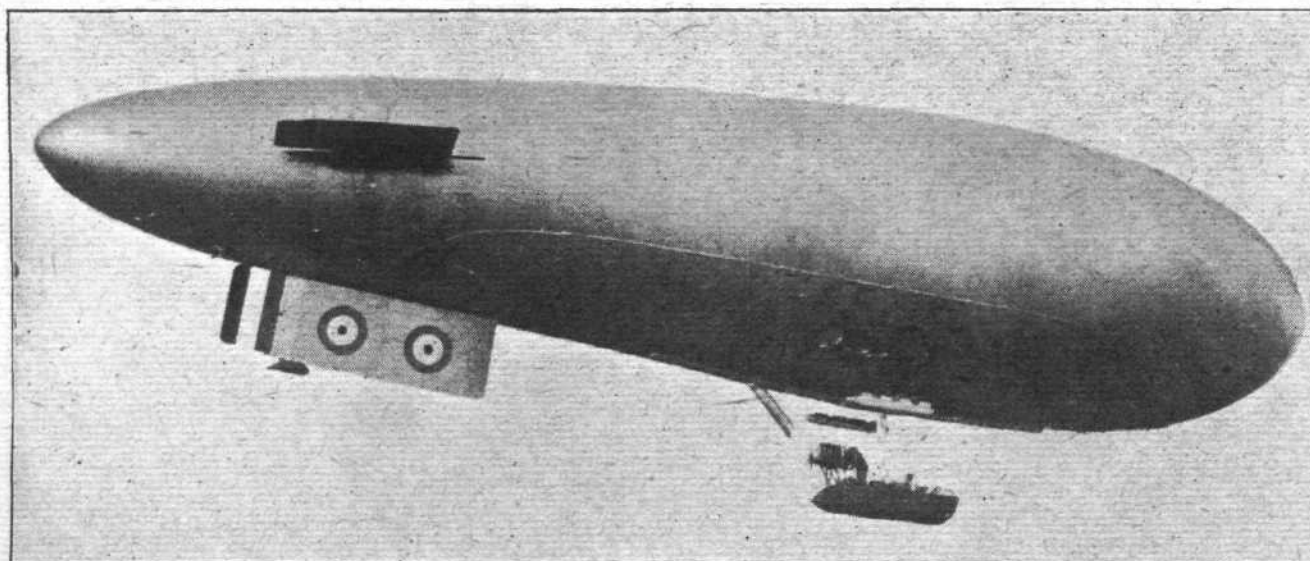
considered the first trial so satisfactory that he ordered twelve more of what was known as the "Submarine Scout" type on March 20. To complete the story of this first ship, it may here be added that work was commenced on March 8 on the construction of an S.S. Airship Station at Capel, on the edge of the cliffs between Folkestone and Dover. S.S.1 set out from Kingsnorth on May 7 to "commission" this station, but while travelling at about 50 miles an hour close to the ground she struck some telegraph wires on the Dover-Folkestone road; the envelope caught fire and the airship was completely destroyed, although the occupants escaped practically undamaged.

S.S.2 was designed by Mr. Willows—who was at that time with Messrs. Airships, Ltd.—and was delivered during the course of March. The envelope was unusual, being made of aeroplane fabric unimpregnated with rubber, but being well protected with "dope," of which there were two coats on the inside and five in all on the outside. The suspension was by means of "toggles" from a rigging band, somewhat similar to the subsequent kite-balloon system. The car was of a considerably more complicated nature than the service design, and, to assist in the distribution of the weight over the envelope was lengthened by two spars aft and one forward. A Curtiss 100 h.p. engine was fitted, driving, through a leather belt, two swivelling propellers. The same engine also drove the blower. This ship appears not to have met with Admiralty approval and was not duplicated. A number of cars similar to the nacelle of a Maurice Farman car were, however, ordered from this firm.

The only other private design submitted came from Messrs. Armstrong, Ltd. The first ship (numbered, for reasons of classification, S.S. 22) was delivered in July. (All the events

of which we are speaking took place in 1915.) It was very similar to the Service design except that it had what was to all intents and purposes the fuselage of an Armstrong-Whitworth aeroplane, in place of the B.E. 2c type. A blower driven off the Renault engine was provided, and bamboo nose-stiffeners were fitted to the envelope, which had been made by the French Clément-Bayard firm. This was the only private design to meet with approval, and eight more (numbered S.S. 40-47) were ordered; of which four were subsequently purchased by the Italian Government. In these the blower was dispensed with and the standard "air-scoop" adopted.

To return to the chronological sequence of events; S.S. 3 appeared in April. She was the first of the first batch of twelve ships ordered on March 20, all to be of identical pattern with the Service design of S.S. 1, with certain minor modifications. She had a 60,000 cubic foot envelope made by Messrs. Short, and was fitted with an "air-scoop" in place of a blower. This was also the first ship in which the principle was introduced of having two, in place of one, "vertical" planes fitted tangentially to the envelope. This feature was subsequently the subject of a heated controversy which at one time raged throughout the airship service. The discussion was started by the genial Commanding Officer of Luce Bay—a well-known figure in air circles—sending in a report of the results of taking off the two planes and fitting only one vertical to the ground. A larger rudder was fitted, and it was claimed that the steering was equally good while the resistance was reduced and a certain amount of weight gained. This modification divided the Service into two camps, and long and bitterly did the battle rage. Subsequently the principle of having one plane only was made standard.



The S.S.Z. (75 h.p. Rolls-Royce "Hawk"), an improvement of the S.S.P. produced in the Autumn of 1916



The S.S.T., fitted with two 75 h.p. Rolls-Royce "Hawk" engines, produced in 1918

Of the other early ships S.S. 7 is the only one that need be referred to. In this ship the air supply to the ballonets proved unsatisfactory, and the metal shutters which acted as valves were discarded in place of the "crab-pot" fabric non-return valves which were thereafter standard and proved not the least successful of the many novelties in airship practice introduced into the S.S. type from time to time. They are somewhat similar to the distributing valves fitted in the ballonet system of the early Parseval airships.

The "Maurice Farman" type referred to above, numbered 28 to 39, began to come along toward the end of the year 1915, the first ship being put through her trials at Kingsnorth in November. The envelopes were in all respects identical with the B.E. 2 C type, the cars being, as the name implies, fitted with pusher in place of tractor engines. They were slightly slower than the others, and, though more comfortable, were mainly used for training purposes. The cars, as already mentioned, were made by Messrs. Airships, Ltd.

The Armstrong-Whitworth type Nos. 40 to 47 were produced during 1916. Their chief importance perhaps lies in the fact that they caused the introduction of the 70,000 cubic foot envelope, in place of the 60,000 cubic foot used in the earlier ships, which subsequently became standard. In these ships also the experiment was first tried of removing the petrol tanks from the car and slinging them from the envelope. One of this type, specially fitted with an 85,000 cubic foot envelope doped black, was detailed for work with the B.E.F. in France. She was capable of reaching greater heights than the ordinary type—on one occasion 10,500 feet, which is probably a non-rigid "record," was reached—and being fitted with exceptionally efficient silencers on three occasions crossed the lines and returned without being discovered, at a height of about 4,500 feet. These flights were on "special service" of a similar nature to those described by M. Jacques Mortane in his recent book. These "A-W S.S." were fitted with 100 h.p. Green engines.

In January, 1916, approval was given for the building of

six "S.S.P." or Kingsnorth-Pusher ships. These ships again, were fitted with 100 h.p. Green engines, and, though an improvement on all the previous types, never achieved great popularity, and were overshadowed and supered by the "S.S. Zero," which was produced in the autumn of the same year.

The latter ships, which did such wonderful work during 1917 and 1918, owed their inception to the inventive ability of the officers and men at Capel Airship Station. They were, in speed, endurance and comfort, a great advance on any previous type; a good deal of their success being due probably to the fact that they were fitted with 75 h.p. Rolls-Royce "Hawk" engines. They carried a crew of three, in place of two, and the car was capable of floating on the water as well as being specially strengthened for towing from surface craft. Their main details are now familiar, and hardly require a description. In all seventy-one of them were constructed, of which fifty-three were in commission at the signing of the Armistice, in addition to four sold to foreign Governments.

In 1918 a modification of the S.S. Z type was produced, known as the S.S. T. This ship was fitted with two 75 h.p. Rolls-Royce "Hawk" engines, mounted above the stem of a streamlined car and driving pusher screws. The envelope had a capacity of 100,000 cubic ft., and measured 165 ft. in length by 35 ft. 6 ins. diameter. A crew of four or five was carried. Its speed was in the neighbourhood of 57 m.p.h., and it had a disposal lift of one ton.

It will be seen, therefore, that, with the exception of the nine Armstrong-Whitworth and the cars of the twelve Maurice Farman, all the S.S. Airships used on active service were of Service design. In all cases they were rigged at the various stations, as unfortunately there were no firms with experience in rigging non-rigid airships in this country. The inevitable result of this policy, which was probably unavoidable, was that we are in the position today of having no aircraft firm with any experience in the rigging of airships.

Education in the U.S.

RECENTLY there was held at Cleveland, O., what was termed an "Outdoor Educational Aeronautical Show," and a number of the mayors in the State met at a certain place and flew to Cleveland in a De H.9 machine, piloted by Lieut. Wade. The municipal visitors afterwards met and passed the following resolution, among others:—

"We realise from actual experience in the air to-day that aviation is a quick, clean and convenient mode of transportation. We realise the need of landing-fields in every municipality in Ohio, the birthplace of aviation. Therefore be it resolved that the undersigned mayors of Ohio municipalities do urge that the executive heads of every state and town in Ohio provide and maintain municipal landing places in their localities; and, be it further resolved, that a copy of this resolution be sent to all other municipalities in the State."

The show was open for a week, and in addition to exhibition flights, the programme included a double wedding in the air.

Crash in New York

TEN thousand people watching the Tennis National Singles finals on September 6, at Forest Hills, Long Island, in which Mr. William T. Tilden, the hero of Wimbledon,

wrested the honours from Mr. William M. Johnston, had their attention snatched away by the fall of an aeroplane, states the *Daily Mail* New York correspondent. The smash resulted in the deaths of Lieut. James Murray Grier, U.S.A., who had distinguished himself in the War, and of Sergt. Joseph Saxe, most expert photographer in the Army. They were photographing the champions from the aeroplane.

Blimps for Whale Hunting

A SCHEME for utilising "blimps" for hunting whales is to be tried by Capt. John D. Loop, of Long Beach, Cal., who has had some experience of whaling in the old style. Capt. Loop has invented a harpoon, which can be dropped from the airship, with a buoy attached to trace the whale after it is struck. When the whale comes up for air an attack will be made with bombs. The whales must be quite bucked at having so much scientific attention paid them!

Prohibition from the Air

THE facilities afforded by aircraft for propaganda work are being more and more recognised, and it is now stated that Dr. Aaron S. Watkins, prohibition candidate for the U.S. Presidency, will conduct his campaign by aeroplane.

AIRISMS FROM THE FOUR WINDS

HAVING regard to the much-to-be-regretted hold-up of the Sopwith Aviation Co. and the chance of their entered machine making good on behalf of Great Britain in the Gordon-Bennett Cup race, it is to be sincerely hoped that the Sopwith 'bus will be able to be at the line on September 28. Failing other means, what a chance it should afford the Royal Aero Club to send this representative machine across as a sporting venture.

THAT three days' Air Conference to which we drew attention last week has been fixed for the second week in October, and will be inaugurated by Mr. Winston Churchill. It will be held not a thousand miles away from the Guildhall. Admission will be by invitation only owing to the restricted accommodation. This innovation is a very valuable and helpful step in the politics of Civil Aviation, and we shall look forward to its perpetuation as an Annual Congress of International importance.

THIS gathering has its great importance from the fact of its being directly born of the Air Ministry, and whilst it is independent of the International Aeronautical Federation Annual Conference which has just been concluded at Geneva, it in no way clashes with that old-established body governing the sporting side of Aeronautics. This latter body has decided upon its next meeting at Madrid in October, 1921.

By way of the Air appears to be again the saving clause in one direction in the present Irish tangle. Government letters for Dungarvan (Co. Waterford), it is announced, are now carried by aeroplane to barracks in which police and military are housed. A similar method of delivery is adopted in other parts of Ireland, where raids on mail trains and mail cars have become common.

In this connection that little Sinn Fein story emanating from a news agency, in which by a clever ruse in Bantry the Sinn Feiners captured mails which were being carried by aeroplane, sounds a bit thin. The "enemy," who are reported to have been dressed like soldiers, are said to have made a large white circle in a field outside the town, and so deceived the airmen, who were carrying mails to the military, that they dropped the bags into it. These were quickly gathered into waiting motor-cars and driven away in the direction of Kerry. No trace of the men or mails has been found.

But, except by collusion, where were "t'others" who presumably were told off to receive the mails? and what were the airmen about to accept such a bait as this, as it can hardly be conceived that pilots would be employed on a tricky job like this, except those acquainted with the locality and the arrangements employed for "delivery"? Therefore do we await the contradiction which will without doubt not be long in coming.

ANOTHER far-seeing-ahead bid for air domination by the Germans is being made *via* Bremen. According to information received by the Handley Page Co., Ltd., from the latter city 11,000,000 marks (£60,000) have been subscribed there for the establishment of an air port at Bremen on a huge scale with an extensive aerodrome, Custom house, hangars, repairing shops, signalling apparatus, and every improvement to facilitate international aerial navigation. Needless to say, this will place Bremen in a far better position than Hamburg, which has not exhibited the same interest in aviation, and may lead to the building up of the great Continental air terminus, to the belittling of London.

THE maintenance of the air-post service between Carthagena and Barranquilla, in the South American Republic of Colombia, is reported to have been leased to a private company, who are permitted to issue their own stamps to denote the special air-post fee of 10 centavos per 15 grammes. The first postage stamp of the Compania Colombiana de Navegación Aerea was a large oblong label depicting an aeroplane flying over a seascape, which included an ocean liner and the setting sun. After 2,000 copies had been printed in this design, a new type was adopted showing a biplane in flight and a map of the Colombian coast, printed in green and white.

Is a solution to be found to the development of the air-post in this country in some similar arrangement being entered into here, if only as a temporary measure? The idea has great possibilities in it. In the hands of sound commercial men, under some equitable arrangement with the Government, we can well imagine such real "push" and "go" being brought into operation that in a very short period nothing but air-post would be talked—and indulged in. When the way had been thus shown by private enterprise, the goodwill created could always be taken over by the authorities, under some previously arranged scale of compensation. There are many objections to a State Department adopting hustling commercial methods, and therefore might it be well worth while giving a thought to the Bolivian Government precedent.

FAILING this, again what about that British Air-mail stamp?

PERHAPS it may come, following the meeting of the Congress of the Universal Postal Union, which is due to open at Madrid on October 1. So far, it is authoritatively stated, no proposal has been made for a standard international rate for air postage, but the British Government will submit a scheme for treating air mails as special services, leaving rates to be fixed by agreements, the rate of commission depending on the cost of service, which varies enormously in different countries. For instance, the present letter air postage from Brussels to London is 75 centimes, while from London to Brussels it is 2d. Evidently a weak spot in the arrangements somewhere.

In the meantime the managers of the London Stock Exchange are giving the air services a helping hand. They have caused notices to be exhibited in the "House" directing special attention to the Air Mails between London, Paris, Brussels and Amsterdam. In view of the recent increase in the cost of telegrams, stockbrokers are finding that there are many occasions when letters for Express Delivery by the Air Mails may be substituted for the Telegraphic Service with advantage, both as regards expense and speed in delivery.

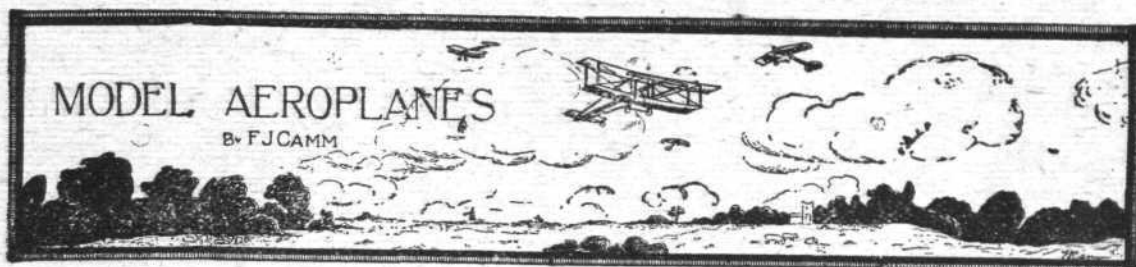
SAINTS are evidently sitting up and taking notice of the progress being made in Aeronautics. The latest addition to these Patrons of the Great Art is the Blessed Virgin of Loreto, who at a solemn ceremony at Loreto on September 12 was proclaimed the patroness of Italian Aviation.

COMPLAINTS, it is stated, have been received by the Mayor of Weymouth, Dorset, that church services have been interfered with by low-flying aeroplanes. Assuming that the offenders are aware of the nuisance created, we think it rather a case of complaining of low flying-pilots.

LIEUT. ROGET's mascot's cosmopolitan puppies should be noted as marking another little Air milestone. According to the *Daily Mail* Paris correspondent, Jollette, the canine mascot which has accompanied Lieut. Roget on his aeroplane tour of the European capitals, gave birth in the plane to a litter of puppies while he was flying to Rome. The mother is an English fox-terrier, the sire is of unknown origin, and the puppies were born in a French aeroplane flying over Italian territory. No wonder there are many and sundry requests to adopt the new arrivals.

THE Saunders "Kittiwake" described in *FLIGHT* last week was on Thursday inspected at East Cowes by Princess Beatrice.

DAHLIAS are essentially flowers which will not tolerate much handling or long survive the absence of water. Therefore Mr. E. Krelage, the well-known bulb-grower of Haarlem, was both wise and enterprising in sending by aeroplane from Holland last week his exhibit of cut blooms for the Royal Horticultural Society Exhibition. One's only regret is that, in spite of such up-to-dateness, Mr. Krelage did not lift the Cory Challenge Cup. But he has the comfort of knowing nobody else did, no group being judged of sufficient merit to justify its bestowal—yet Krelage's dahlias are some blooms, as we can testify.



All communications to be addressed to the Model Editor. A stamp should be enclosed for a postal reply

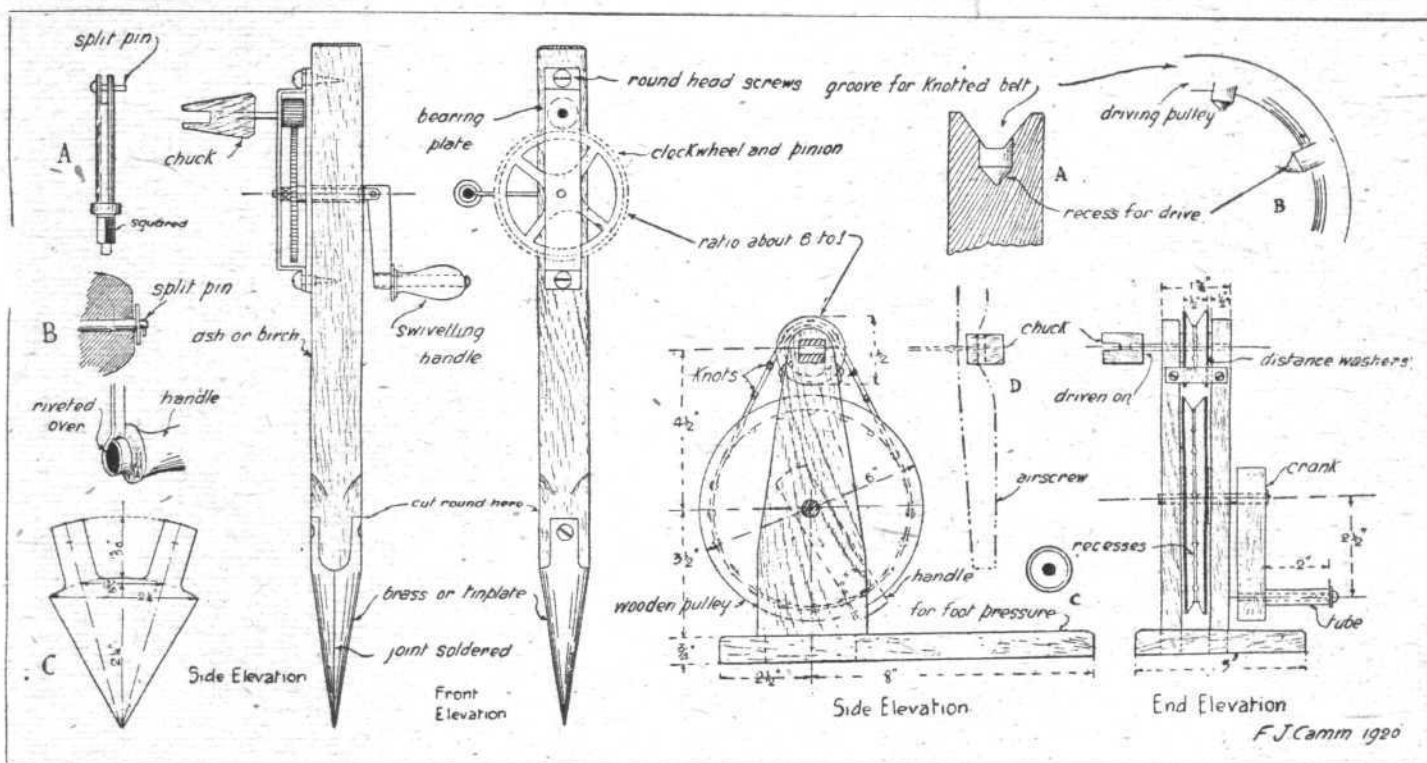
Winding Apparatus

THE drawings herewith show two further pieces of apparatus which I consider essential appurtenances to a club's equipment. It is a tedious job with long-distance or duration machines to have to wind two screws to 1,000 or 2,000 turns, when a geared winder would expedite matters, and one can be easily made. I show two forms: one gear-driven and the other belt-driven, the gear-driven, of course, being the more positive. The belt-driven one, however, has been

pinion shaft, i.e., about $\frac{3}{8}$ -inch, and the wheelshaft should be about $\frac{1}{4}$ in. diameter. The ash stump should be $1\frac{1}{2}$ in. square.

The Aero Model and Research Club.

SINCE the last report concerning this Club appeared in FLIGHT the members have taken full advantage of every brief spell of fair weather to test the enclosed fuselage models exhibited on the stand of Messrs. A. E. Jones at the last Aero Show at Olympia. Up to date the best results appear to



Geared and belt-driven winders

so designed that it may really act as toothed wheels, the belt being knotted at regular intervals to coincide with drilled recesses in the groove of the pulley; this detail is shown by the sketches A and B in the drawing of the belt-driven winder, whilst C is a detail of the handle-fixing.

With regard to the geared winder, I do not consider soft soldering good enough as a drive, and as silver-soldering or brazing will not be within the purview of many readers, I have shown a form of drive where soldering has been entirely dispensed with. The large toothed wheel has its bore filed out to suit a square filed on the spindle, the end of the latter being turned down to a pivot point to locate it in the brass casing. The other end of the spindle is slotted to receive the handle crank, which is held therein by means of a slit pin. Details of the attachment of the handle are given by details A and B. The hard wood stump is chiselled round to a conical form, to receive a brass or tinplate socket, to facilitate its being forced into the ground. This socket is shown by A, which is a developed plan of the shape as it will require to be cut from the tinplate. It is formed and then screwed to the stump, and the joint of the two edges may be soft soldered.

The wheel and pinion spindles of both winders should, by the way, be of silver steel.

A back plate is provided to the gear casing, so that the mechanical portion is self-contained, and merely held to the stump by means of two brass round-headed screws.

The chucks must be of hard wood, preferably birch, to avoid splitting when being driven on the pinion shaft. The latter should be filed to a chisel edge on the end, so that it may cut its way into the small hole drilled in the chuck to pilot it. The hole should be about half the diameter of the

have been obtained with Mr. Jackson's models, the little biplane making some very good flights. Special mention must be made of Mr. Jackson's monoplane with a thick section wing, which made some flights of 40 sec. duration, which is remarkable in view of the low power-ratio, one strand of rubber per oz. being the rule.

Messrs. Coleman, Burchell and Colebatch have also been experimenting. Mr. Burchell's model is something of a heavy weight, scaling 23 oz., and while it has shown itself to be very stable, the propeller proved to be of too fine a pitch and is to be replaced. Mr. Colebatch has also been flying a large machine—a biplane—but he has now turned his attention to a smaller enclosed biplane, weighing 6 oz., which has so far given promising results.

Models of the usual types have been flown by Messrs. Whelpton and Kenny, the former on more than one occasion touching 50 sec., while Mr. Kenny's model scored especially in the matter of quick rising. Mr. Burchell, Junr., has been flying a little "pusher" model, which, owing to its speed, has been dubbed the "Aerial Dart."

A little variation from the usual run has been provided by Mr. Coleman in the shape of a display of night flying with illuminations. Other members have also been experimenting with parachute-dropping, the best results being obtained by Mr. Whelpton. The parachutes are dropped by means of a simple clip worked by a time-fuse.

Replies to Correspondents

W. S. S. (Edinburgh).—I duly forwarded the required address.

D. A. P. (Southfields).—Many thanks for the details of your machine. Can you let me have a drawing?

**The Sopwith Aviation and Engineering Co., Ltd.**

It was announced on September 10 that this firm had decided to go into voluntary liquidation and to close their works forthwith. The announcement of the firm's intention was made to the 1,400 workpeople on September 10, in the following letter, signed by Mr. G. H. Mitchell, works manager:

"We much regret we find it impossible to reopen the works, as the difficulties caused by restricted credit prevent the company from finding sufficient capital to carry on the business, and it will therefore be wound-up."

The works at Kingston-on-Thames were shut down on September 3 until September 20, for the purpose of stocktaking, but adverse conditions developed so rapidly as to make it impossible to reopen the works. We deal further with this matter in a leader on page 990.

Earlier Dispatch of London-Paris Air Mails

THE Postmaster-General announces that, commencing on September 15, the afternoon air mail to Paris will leave Waddon aerodrome at 3.30 p.m., instead of 4.30. The latest times of posting in London will be as follows:—

(a) For letters handed in at General Post Office, 2; Threadneedle Street Branch Office, 1.45; Lombard Street Branch Office, 1.45; Parliament Street Branch Office, 1.30; Charing Cross Branch Office, 1.50; W.C.D.O., 2.10; W.D.O., 1.45; and S.W.D.O., 1.45 p.m.

(For registered letters the mail will close five minutes earlier in each case.)

(b) For letters posted in public letter-boxes, 11.30 a.m. at the South-Eastern District Office, 11.0 a.m. at other district offices and at the larger branch offices in the E.C. district, and 8.30 a.m. in all sub-districts.

In the provinces there will be no change, except at a few places in the south-east of England. In any case of doubt inquiry should be made of the local postmaster.

Paris—London Air Post Cheaper

FROM September 15 the French postal authorities have reduced the extra postage charge on correspondence carried by aeroplane from Paris to London from 3 francs to 75 centimes per 20 grammes, or part of 20 grammes. This charge is in addition to the ordinary postage.

A Year's Work

The following table has just been published in France showing at a glance, the steady growth in the aerial traffic between London and Paris:—

		Trips.		Passengers.	Merchandise Kilogs.
1919.					
Sept.	...	109		250	0
Oct.	...	135		300	3,900
Nov.	...	65		100	2,000
Dec.	...	45		80	1,900
1920.					
Jan.	...	63		35	1,600
Feb.	...	85		102	7,280
Mar.	...	159		183	9,285
April	...	170		198	7,780
May	...	265		450	8,900
June	...	372		775	11,500
July	...	329		881	10,000
Aug.	...	304		985	6,665
Totals	...	2,101		4,339	71,410

H.P. Continental Air Services

THE records of the Handley Page Continental Air Services, in conjunction with Cie Messageries Aériennes, show that during the period September 2, 1919, to September 4, 1920, the passengers carried totalled 3,073, the freight carried aggregated 152,578 lbs., while the total distance flown was 218,100 miles.

Climbing Mont Blanc by Air

Two attempts to land on the summit of Mont Blanc have failed, the machine piloted by M. Durafour, and carrying M. Gubosset as passenger, being unable to climb sufficiently high. A number of guides and experienced alpinists were on the summit on September 8 and 9 to assist at the landing, and another machine, piloted by Milliet, a French pilot, had a cinematograph operator on board, to take a film of the happenings. The start was made, in each case, from Geneva, to which place the machine returned after failing to go higher than 13,000 ft., some 2,000 ft. below the summit of Mont Blanc.

NEW COMPANY REGISTERED

ADASTRAL AIR LINES, LTD., 16, Regent Street, S.W. 1.—Capital £3,000, in 2,850 ordinary shares of £1 each, and 3,000 deferred shares of 1s. each. Aviators, carriers and transporters of passengers and cargo by flying machines, airships, balloons, etc. First directors: C. H. Oliver, J. E. F. Harley, G. W. R. Pidsley and F. W. de Valla.

SIDEWINDS

DISTINGUISHED visitors to the Cellon works at Richmond the other day included the Greek Naval Attaché, who, after going over the works, inspected a large consignment of "Cellon" dope which was being despatched to the order of the Greek Government.

FROM Messrs. C. A. Vandervell and Co., Ltd., comes a useful booklet of Running Instructions for the C.A.V. magneto models K.U.1 and K.U.2, the former for single cylinder engines and the other for twin (V type excepted) up to 3 h.p. The booklet, which can be had from the C.A.V. headquarters, Worplesdon, W. 3, also includes a chapter of "Hints on the Care of the Magneto."

IMPORTS AND EXPORTS, 1919-1920

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; and for 1919, see "FLIGHT" for January 22, 1920.

	Imports.		Exports.		Re-Exportation.	
	1919.	1920.	1919.	1920.	1919.	1920.
January ...	555,989	2,323	57,571	32,752	—	697
February ...	453,822	9,320	57,972	68,932	—	—
March ...	704,424	2,092	72,716	67,600	400	—
April ...	97,662	5,918	25,433	148,484	—	—
May ...	136,631	761,425	38,428	237,627	—	400
June ...	1,410	491	41,526	300,572	—	61,150
July ...	136,463	51,020	41,290	286,646	—	—
August ...	67,292	116	60,581	130,774	—	2,544
	2,153,693	832,705	395,517	1,273,387	400	64,791

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motors. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1919

Published September 16, 1920.

- 3,890, 3,891. W. B. STOUT. Aeroplanes. (149,708, 149,709.)
12,266. N. A. T. N. FEARY. Flexible material for aeroplanes. (149,745.)
12,342. AUSTIN MOTOR CO. and C. B. WALKER. Screw propellers. (149,755.)
12,478. T. R. CAVE-BROWN-CAVE. Airships. Non-rigid. (149,760.)

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